Southern Rocky Mountain Management Plan

Photo credit: Karl Ehrler

Ministry of Sustainable Resource Management
February 14, 2003 Draft

PUBLIC REVIEW DRAFT

Part D - Operational Implementation

1.0 Agency Implementation Role 63
2.0 Private Sector Role 63
3.0 Public Role 64

Part E – List of Maps 65

SUPPORT INFORMATION

Definitions *(incomplete)* 67

Bibliography *(pending)*

Ktunaxa Nations Memorandum Of Understanding *(pending)*

Appendices
(Appendices 2-6 are included in hardcopy plans and as part of the main document on the website. Other appendices are provided on the website as available)

1.0 Maps (App. prefix; maps not required to implement plan direction)
2.0 Plan Monitoring and Issues Potentially Requiring Plan Amendment 69
3.0 Agency Roles and Implementation Projects 70
4.0 Draft Terms of Reference Southern Rocky Mountain Advisory Committee 75
5.0 Best Management Practices 78
6.0 Draft Sustainability Vision and Principles 111
7.0 Connectivity
8.0 Ungulate Winter Range report
9.0 Water Inventory and Allocation Strategy
10.0 Original SRMMP Announcements
11.0 Original SRMMP Terms of Reference
12.0 Background Report
13.0 Open House Summary Report
14.0 Focus Group Summaries
15.0 Inter-Agency Liaison Group and Project Teams
16.0 Consultation Report
17.0 Recreation Management Strategy Text, Background Landscape Unit summaries
18.0 Landscape Unit Summary of Issues
19.0 Socio-Economic Assessment/Environmental Accounts Assessment
20.0 Kootenay Boundary Land Use Plan – Higher Level Plan
21.0 Kootenay Boundary Land Use Plan –Implementation Strategy
22.0 Management of Coal Bearing Lands
23.0 Old Growth and Mature Seral Deployment summaries
24.0 Additional Background Support documentation

Southern Rocky Mountain Management Plan

Table of Contents

Part A – Executive Summary 1

Part B – Management Plan (includes overview page-size maps)

1.0 Introduction

- 1.1 Plan Area/Geography 3
- 1.2 Planning Context and Process 3

2.0 First Nations 7
3.0 Mining and Energy 8
4.0 Forestry 9
5.0 Agriculture and Range 10
6.0 Trapping 13

7.0 Recreation

- 7.1 Recreation Management Strategy 14
- 7.2 Resident Hunting and Angling 22

8.0 Tourism

- 8.1 General Tourism 23
- 8.2 Adventure Travel 24
- 8.3 Guide-outfitting 25
- 8.4 Angling Guiding 27

9.0 Conservation

- 9.1 Riparian 28
- 9.2 Old Growth and Mature Seral Management 30
- 9.3 Wildlife Tree Retention 33
- 9.4 Wide-ranging Carnivores 34
- 9.5 Ungulates 36
- 9.6 Ungulate Winter Range 37
- 9.7 Species at Risk 43
- 9.8 Access 44
- 9.9 Connectivity 45
- 9.10 Fish 48
- 9.11 Grassland Communities 49
- 9.12 Air Quality 50

10.0 Water 51
11.0 Visual Landscapes 55
12.0 Heritage and Paleontological Resources 57
13.0 Communities, Settlement and Infrastructure 58

Part C - Plan Review and Monitoring

1.0 Role of Provincial Government Inter-Agency Committee (IAC) 60
2.0 Advisory Committee for SRMMP 60
3.0 Plan Monitoring 60
4.0 Plan Review and Amendments 61

PART A - EXECUTIVE SUMMARY

The Southern Rocky Mountain Management Plan (SRMMP) covers the Flathead, Wigwam, the east side of the Bull River and the west side of the Elk River drainages in the southeast corner of British Columbia. The intent of the plan is to facilitate sustainable economic development. The plan balances economic, social and environmental values for the long-term health of the economy, communities and ecosystems.

Specific resource management direction is contained in Part B. Chapters in Part B are: Introduction, First Nations, Mining and Energy, Forestry, Agriculture and Range, Trapping, Recreation, Tourism, Conservation, Water, Visual Landscapes, Heritage and Paleontological Resources, and Communities, Settlement and Infrastructure.

Sections within the Recreation Chapter cover the Recreation Management Strategy (RMS) and resident hunting and angling. Tourism sections are: general tourism , adventure travel, guide-outfitting and angling guiding. Conservation topics include: riparian, old growth, wildlife tree retention, wide-ranging carnivores, ungulates, ungulate winter range, species at risk, access, connectivity, fish, grassland communities and air quality.

Individual chapters and sections address the following aspects of management of the specific resource:

- Issues
- Intent: an expression of management intent that provides context for reviewing plan effectiveness, as well as ongoing and proposed resource activities
- Resource objectives: spatial, measurable and mandatory direction; establishes the requirements for results-based regulation
- Best management practices: provides references and links to various state-of-the-art management practices and relevant documents
- Economic benefits and opportunities
- Measures of success: parameters and trends for assessment of plan effectiveness
- Maps: specifically those needed to implement plan direction

The SRMMP is consistent with direction from: the 1995 East Kootenay Land Use Plan; the 1997 Kootenay-Boundary Land Use Plan Implementation Strategy; and the 2002 Kootenay-Boundary Higher Level Plan order. For the plan area, the SRMMP provides a one-stop shop for resource managers and operators to find all the information needed to appropriately conduct their activities. In the new results-based context, the SRMMP specifies those targets and objectives which need to be met.

The SRMMP does not limit, and is not intended to limit, ongoing Treaty negotiations between the Ktunaxa Kinbasket Treaty Council, British Columbia and Canada. Consultation with the Ktunaxa Nation has occurred. However, to date the Ktunaxa do not consider the consultation to have been meaningful or adequate.

Public consultation, through informal discussions and meetings, sector focus group sessions, workshops, public meetings, open houses and the SRMMP website, has been extensive.

Considerable significant, new technical work has gone into preparation of the SRMMP. New ungulate winter range mapping and guidance are based on the extensive work of the East Kootenay Ungulate

Winter Range Committee (see Appendix 8.0). The emphasis has shifted from species management to habitat management, and from cover requirements to forage availability. A totally new approach to wildlife connectivity has been developed, through interaction with scientific and technical experts. The emphasis has shifted from definition of wide corridors to utilization of a matrix approach, in which specific ecological elements (e.g. ungulate habitats, grizzly bear avalanche tracks, riparian zones, old growth and mature forest areas, and inoperable forest) are managed in a coordinated manner. Riparian management for the Flathead River and its major tributaries is based on flood-plain mapping ("enhanced riparian zones") as opposed to strict numerical setbacks. This approach will be extended to the other major rivers over time. The Recreation Management Strategy provides access management direction for various outdoor recreational activities, based on stakeholder negotiations.

Certainty for industry has been achieved through several initiatives. Old growth management areas (together with mature seral areas in certain Landscape Units and biogeoclimatic subzones) have been defined, allowing forest managers to plan effectively.

The new two-zone system for minerals is fully incorporated, addressing long-standing concerns of the mining sector in relation to the implications of land-use plan strategic objectives.

Community stability will be enhanced through establishment of a stable investment climate which will encourage resource sectors to develop to their sustainable potential.

The SRMMP will be monitored and amended over time, as conditions and priorities change.

PART B – MANAGEMENT PLAN

B.1.0 INTRODUCTION

B.1.1 Plan Area/Geography

The Southern Rocky Mountain Management Plan area (the "plan area" or "SRMMP area") lies within the Continental and Border Ranges of the Canadian Rocky Mountains. It includes the Canadian portions of the Flathead River and Wigwam River drainages in their entirety, as well as the west side of the Elk River drainage and the east side of the Bull River drainage (Maps B.1.1 and E.1.1). The plan area extends from the B.C./Montana border north to the southern boundary of Heights of the Rockies Provincial Park. The SRMMP is a Provincial Crown land plan; no Federal lands, private lands, or protected areas are included. The plan area has a total area of 440,569 ha and includes 9 Landscape Units and a portion of one other (Table B.1.1).

Recognizing that activities outside of the plan area may influence the SRMMP, a larger area, comprising the complete Elk and Bull River drainages, was considered for some resource evaluation purposes. This "resource evaluation area" has a total area of 748,938 ha, covers approximately one third of the Cranbrook Forest District, and encompasses 16 complete Landscape Units (Table B.1.1).

Table B.1.1: Summary of Planning Area

	Landscape Units	Total Area (ha)	Crown non-park area (ha)
SRMMP Area	C14-C18, C23-C26, part of C27	440,569	361,169
Resource Evaluation Area	14 -28, 38	748,938	552,304

Source: Cranbrook Forest District PCRS Reports by Landscape Unit

The plan area is unusual in its wide variety of significant resource values. These include wild-land attributes and remote landscapes, diverse and contiguous natural habitats and world-renowned populations of fish and wildlife. High conservation, scenic and recreation values of the land and waters of the plan area contribute to the quality of life for residents, and are spurring the current dramatic growth in tourism-related industries. Known subsurface resources include natural gas, minerals and coking coal; coal deposits are hosted by the same coal-bearing formation as that occurring at the coal mines that underpin the economy of the plan area. Forestry, agriculture, trapping and other resource-related activities contribute to a diversified economy. These values collectively drive the need for a comprehensive, integrated management plan.

Maps:

B.1.1 SRMMP overview
E.1.1 SRMMP area

B.1.2 Planning Context and Process

In November of 2001 the B.C. government decided to rescind the Environment and Land Use Act Order-In-Council that created the former Southern Rocky Mountain Conservation Area. Kootenay regional staff of the Ministry of Sustainable Resource Management (MSRM) were directed to develop a new plan with a balanced approach for management in the Southern Rocky Mountain area.

The SRMMP area is larger than the previous Conservation Area, which utilized the current forest-operability line as its boundary and did not include most of the operable forest land-base (generally lower-elevation lands). The SRMMP, on the other hand, includes all operable and inoperable forest lands.

Three planning cells in the Rocky Mountain Trench, covering Sheep Mountain and Wigwam Flats, which were part of the Conservation Area, have been deleted from the SRMMP, and will be included in a separate planning process.

Plan context

The SRMMP is a landscape-level strategic plan for resource management on provincial Crown lands. The SRMMP has been written so that its contents can be incorporated into a larger Sustainable Resource Management Plan (SRMP) at a future date.

As a landscape-level plan, the SRMMP is intended to be consistent with the Cabinet-approved strategic regional land-use direction for the area:
- East Kootenay Land Use Plan (EKLUP, 1995);
- Kootenay-Boundary Land Use Plan Implementation Strategy (KBLUP-IS, 1997);
- Kootenay-Boundary Higher Level Plan (KBHLP, 2002).

The first two provided policy direction, while the third established Resource Management Zones and legal Objectives for forest development under the Forest Practices Code. The SRMMP also incorporates and builds on these broader-level plans, and is intended to provide a "one-stop shop" for clear land and resource management direction in the area; in effect it replaces all these broader-level plans for the SRMMP area.

Plan scope

In addition to the requirement of consistency with broader-level plans, there are several bounds on the scope of the SRMMP planning exercise that are consistent with its overall context and mandate. Background on some of this material can be found in Appendices 10.0 and 11.0. For example, the SRMMP will:

- be consistent with provincial draft sustainability vision and principles (see Appendix 6.0)
- recognize and balance all resource values and uses
- seek input from the public, interest groups and First Nations
- stimulate sustainable economic development
- be accountable
- provide the basis for consistent decision-making in the area
- provide certainty
- be clear and easy to implement
- minimize regulation
- respect existing tenures and rights in the plan area

In addition, it is recognized that certain activities outside the plan area will influence resources and their management within the plan area, but these are out of the control of the SRMMP and must await further landscape-level planning before integration can occur.

First Nations consultation

The SRMMP area lies within the traditional territory of the Ktunaxa Nation which includes Kinbasket peoples ("Ktunaxa"). The Ktunaxa are in Stage 4 of the 6-stage Treaty Process.

The Ktunaxa have been informed of the SRMMP process through:
- Meetings (presentations to Ktunaxa Kinbasket Treaty Council ("KKTC") at their request; cross-cultural workshop; KKTC-MSRM staff meetings)
- SRMMP Public Open Houses (December 2001; October 2002)
- KKTC staff participation on the Interagency Liaison Group (IALG)
- KKTC staff participation on the SRMMP Project Team
- Copies of maps provided to KKTC office
- Written correspondence, telephone calls, email
- Publicly-accessible website
- Discussion with, and input from, KKTC staff .

The Ktunaxa do not consider that consultation, as of February 2003, on the SRMMP has been meaningful or adequate.

Meaningful consultation with the Ktunaxa will be pursued as described in Section B.2.0.

Stakeholder and public consultation

The SRMMP process is intended to be open and transparent, and to rely on extensive consultation with the public and stakeholder groups.

Key components of the public consultation process to date include:

- Open Houses (Appendix 13.0)
- Public Meetings (Appendix 13.0)
- Multi-stakeholder workshops for the Recreation Management Strategy (RMS) (Appendix 17.0)
- Technical meetings of the East Kootenay Ungulate Winter Range Committee (Appendix 8.0)
- Connectivity workshops and technical meetings (Appendix 7.0)
- Website information including a Background Report and comment-submission link
- Focus Group meetings (Appendix 14.0)

Focus Groups were sector-based, and included environmental, subsurface resources, forestry, agriculture, local government and community economic development, commercial guide-outfitting, recreational hunting and fishing, and tourism interests, as well as Montana interests and the East Kootenay Residents' Land Use Coalition. Meetings with Focus Groups were intended to provide the Project Team with advice, information and perspectives on resource management issues.

Interagency consultation

To ensure that government agencies were kept informed and allowed the opportunity for input, an Interagency Liaison Group (IALG) was established. This group included staff of the Ktunaxa Kinbasket Treaty Council, and senior regional representatives of government agencies (Appendix 15.0), including Land and Water BC, the Ministries of Energy and Mines, Forests, Water, Land and Air Protection and Agriculture, Parks Canada, the Regional District of East Kootenay, and Alberta government. The IALG met periodically with the SRMMP and Recreation Management Strategy Project Teams (Appendix 15.0).

Socio-economic and environmental analysis

A socio-economic and environmental analysis (SEEA) is being undertaken as part of the SRMMP (see Appendix 19.0). It examines the projected impacts of the plan on various sectors.

Separate socio-economic and environmental base-cases were developed, describing the pre-SRMMP situation. A draft SEEA for the SRMMP has is being developed based on this draft of the plan. All modifications to the plan made subsequent to the public review will be reflected in the final SEEA.

Plan outline

The main body of the SRMMP (the remainder of Part B) is divided into chapters based on resource values and issues. The main chapter headings are: First Nations, Energy and Mining, Forestry, Agriculture and Range, Trapping, Recreation, Tourism, Conservation, Water, Visual Landscapes, Heritage and Paleontological Resources, and Communities, Settlement and Infrastructure. Several of the chapters are sub-divided into resource-specific sections.

Each chapter or section contains basic information needed by resource managers. The mandatory provisions, namely Resource objectives, have been made easily identifiable. More detailed and background information on many issues and resource values, including descriptions of the best management practices, can be found in the appendices.

Chapters or sections are comprised of:

- Issues
- Intent: an expression of management intent that provides context for reviewing plan effectiveness, as well as ongoing and proposed resource activities
- Resource objectives: spatial, measurable and mandatory direction; establishes the requirements for results-based regulation
- Best management practices: in Appendix 5.0, or links to management guidance documents (in italics)
- Economic benefits and opportunities
- Measures of success: parameters for assessment of plan effectiveness
- Maps: overview maps that provide clarity to text

Part C contains information on plan review and monitoring, while Part D covers operational implementation.

Technical maps necessary to implement plan direction are contained in Section E. Other maps used in preparation of the plan and/or considered important for background information are contained in Appendix 1.0.

B.2.0 FIRST NATIONS

The SRMMP area lies within the traditional territory of the Ktunaxa Nation which includes Kinbasket peoples ("Ktunaxa"). Of the seven bands, five are located in British Columbia and two are in the United States. The Canadian First Nations communities that make up the Ktunaxa are the Lower Kootenay Band, St. Mary's Band, Shuswap Band, Tobacco Plains and Columbia Lake Band. The reserve lands of the Tobacco Plains lie closest to the plan area.

The Ktunaxa traditionally followed "a nomadic seasonal subsistence round determined by the location and timing of abundance of a broad range of animal and plant resources" (W.Choquette, personal communication). The people traveled extensively throughout the Wigwam, Elk and Flathead valleys (and elsewhere outside the plan area) hunting, trapping, fishing and harvesting vegetation. They also crossed the Continental Divide to hunt bison on the prairies.

Numerous First Nations archaeological sites are spread throughout the plan area, and are particularly concentrated in the area between Sparwood and Elkford. Archaeological sites represent only those activities that have left a footprint on the landscape such as campsites or aboriginal mining. Traditional uses such as hunting, berry picking and travel routes may not be evident on the land, however are known through oral history. Traditional use studies of the Ktunaxa in the plan area are ongoing.

Issues:
- The Ktunaxa are currently at stage 4 of the 6-stage Treaty Negotiation Process.
- The Ktunaxa do not consider that consultation as of December 2002 on the SRMMP has been meaningful or adequate
- The Ktunaxa have expressed concern about their limited capacity to effectively participate in the process

Intent:
- Aboriginal rights will not be unjustifiably infringed upon by resource development activities of the Crown or its licensees.
- The Crown and its licensees have an obligation to consider potentially existing aboriginal rights in decision-making processes that could lead to impacts on those rights
- Consultation with the Ktunaxa will continue to be consistent with Provincial policy (see Best Management Practices).
- Provide for cultural, economic and environmental interests of the Ktunaxa.

Best Management Practices:
- *Provincial Policy for Consultation with First Nations October 2002*

Effective participation by the Ktunaxa Nation in the SRMMP may be described in a Memorandum of Understanding ("MOU") to be completed between the Ktunaxa and the Ministry of Sustainable Resource Management. Both parties' commitments to achieving effective participation will be included in the MOU.

Maps:
B.2.1 Ktunaxa Nation Traditional Territory

B.3.0 MINING AND ENERGY

The SRMMP area has known resources and/or potential for various subsurface resources, including coal, coalbed methane, minerals and oil and natural gas (see Appendix 12.0 and Maps App.3.1 and App.3.2). Aggregate resources are produced from low-elevation sites in some of the major valleys, and rock is quarried at several sites.

Five large coal mines lie just outside and to the east of the SRMMP area within the resource evaluation area. Some of the coal-bearing lands in the SRMMP (Map App.3.1) are within the Enhanced Resource Development Zone for coal (ERDZ-C) as outlined in the East Kootenay Land Use Plan ("EKLUP").

For a comprehensive description of the geology and petroleum potential of the plan area see Monahan (2001a and 2001b).

Issues:
- There is a need to confirm certainty of access for subsurface resource development in the SRMMP area, in light of:
  - previous and ongoing conservation initiatives operating outside the Provincial land-use planning process
  - Provincial land-use designations and objectives related to managing other resource values, but which potentially reduce opportunity for, and increase the cost of, subsurface resource development, and add to investor uncertainty
- Knowledge of the area's subsurface resource worth is incomplete, due to hidden nature of resources and relative lack of exploration to date for most commodities
- There is a current lack of clarity concerning operational implementation of the ERDZ-C designation

Intent:
- Encourage exploration and development of subsurface resources, consistent with the New Era commitments to provide faster approvals and greater access to Crown land and resources in order to protect and create jobs in mining and oil and gas production
- Implement certainty-of-access for subsurface resource exploration and development, specifically activities related to exploration and development of subsurface resources are permitted throughout all non-protected lands
- Ensure activities related to subsurface resource exploration and development are conducted in a manner that respects other resource values, specifically:
  - SRMMP maps and associated management direction will provide information needed to identify and address sensitive values on a site-specific basis
  - standard permitting and approval processes will be utilized
- Incorporate new information concerning subsurface resources into plan monitoring and the evolving resource management regime
- Manage ERDZ-C lands in the SRMMP area (see Map B.3.2) as enhanced resource development zones for coal. The ERDZ-C designation represents a long-term priority commitment and long-term security of access for the coal industry. In ERDZ-C lands, ecosystem function may be temporarily compromised, but long-term environmental quality will be addressed through reclamation and mitigation, as determined by the permitting process (also see Appendix 22.0)

- Develop specific ERDZ-C guidelines as part of a future project addressing all ERDZ-C lands both within and outside the SRMMP area (see Map B.3.2), in order to deliver certainty for the coal sector (see Appendix 22.0)
- Ensure a continuing local supply of aggregate resources which meets development demands

Resource objectives:

Objective 3.0.1

All lands in the plan area displayed as "land open to mining" in Map B.3.1 are available for mineral exploration and development.

Objective 3.0.2

Management intent and objectives for other resource values in the SRMMP (including, but not limited to, old-growth, connectivity, ungulate winter range, riparian, visual landscapes and recreation) will not preclude mining activities anywhere in the lands referred to in Objective 3.0.1

Economic benefits and opportunities:

- Certainty for all subsurface resource sectors
- New and continuing exploration for minerals, coal, coalbed methane, oil and natural gas
- Large-scale production, processing and distribution
- Small-scale production, production and distribution (including aggregate and decorative stone)

Measures of success:

- Reasonable, cost-effective and appropriate access for exploration and development of subsurface resources available throughout the SRMMP
- Increased subsurface resource tenures and overall exploration expenditures in the SRMMP (partly reflecting improved investor confidence)
- Other resource values and uses addressed appropriately through standard project approval processes
- Improved subsurface resource knowledge and data (based on results of exploration projects)
- Improved public knowledge and awareness of subsurface resources and associated processes

Maps:

B.3.1	Mineral 2-zone
B.3.2	ERDZ Coal
App.3.1	Coal-bearing lands
App.3.2	Mineral potential

B.4.0 FORESTRY

The area supports an active forest industry based largely on primary production: harvesting, saw milling and pulp production. Forest tenures include: two major forest licenses, a woodlot license, and timber sales under the BC Timber Sales Program.

Issues:

- Much of the plan area is dominated by lodgepole pine which is susceptible to mountain pine beetle infestation. As of January 2003, due to significant levels of mountain pine beetle infestation, landscape units C23 and C24 within the plan area have been designated as Emergency Management Units as part of the Emergency Bark Beetle Management Area for the province.

Intent:

- Maintain access to the available timber harvesting land base
- Maintain a sustainable, secure long-term timber supply and ensure the availability of the short term timber supply
- Maintain an ongoing environmentally sustainable and economically viable timber industry within the plan area
- Maintain seral stage targets as per Section B.9.2

Resource objectives:

Objective 4.0.1

Enhanced Resource Development Zones – Timber (ERDZ-T) emphasis in the plan area is assigned as outlined on Map B.4.1, to support intensive forest management for the purpose of increasing volumes of merchantable timber and to reduce industry costs while maintaining adequate environmental stewardship as per Chapter B.9.0.

Objective 4.0.2

To promote intensive forest management, the green-up height for ERDZ-T's in the plan area as shown on Map B.4.1 is established as successful regeneration of cut blocks.

Economic benefits and opportunities:

- Provides land-use certainty for operators and investors
- Helps provide continuing employment in the forest sector
- Secondary and tertiary manufacturing (value-added) operations

Measures of success:

- A healthy forestry sector contributing to a diversified economy in the SRMMP area and surrounding areas

Maps:

B.4.1 ERDZ Timber
E.4.1 ERDZ Timber by Landscape Unit

B.5.0 AGRICULTURE AND RANGE

Beef cattle production is the most common form of agriculture in the plan area. There is some potential for other forms of agriculture. There are Crown grazing tenures throughout the plan area, with the majority of use concentrated in the Elk River, Bull River and Sand Creek watersheds. Agriculture Land Reserve designations in the plan area are shown on Map B.5.1.

Issues:

- High quality range in the plan area is limited and decreasing, largely due to forest ingrowth

- The supply of available forage is dependent on forest disturbance, which is not necessarily an even-flow situation
- Appropriately designed grazing regimes may enhance the availability and use of forage for livestock and wild ungulates
- A sustainable and profitable beef cattle industry in the plan area is dependent on the availability of rangeland for grazing
- Class III Agriculture (*Canada Land Inventory*) is the highest classification level in the plan area because of limitations to the growing season. This classification, however, accommodates optimum perennial forage production.
- Riparian areas are important watering sites for livestock, contribute to livestock forage, and maintain a stable water supply. Concentrated livestock use of riparian areas may impact proper functioning condition.
- In the Wigwam and Flathead River watersheds (LU C14 -C18) high quality, available forage is limited and of critical importance to maintaining internationally significant wildlife populations of ungulates and carnivores. Livestock grazing permits in these watersheds are currently associated with guide-outfitting operations
- In the Elk River, Bull River and Sand Creek watersheds high quality, available forage is limited and decreasing, and this continues to precipitate conflicts between wildlife populations and domestic livestock
- Predator impacts on domestic livestock, particularly in LU C14-C18, may jeopardize maintenance of natural predator-prey relationships

Intent:

- Maintain a healthy and profitable agricultural sector that respects sensitive environmental values, subject to terms and conditions of approved tenures and plans, and consistent with SRMMP objectives
- Maintain or enhance livestock grazing activity, subject to terms and conditions of approved grazing tenures and range use and range stewardship plans, to maintain agriculture opportunities while managing for viable populations of wildlife
- Eliminate potential for parasite and disease transfer from domestic livestock to wildlife
- Manage the Wigwam and Flathead River watersheds (LU C14 – C18) to ensure sustainable forage for wildlife
- In areas within the plan area designated as Agriculture Land Reserve under the *Agriculture Land Reserve Act* (Map B.5.1), consider sites with high forage production as a priority for forage production enhancement while maintaining grassland integrity
- Manage range land to be healthy and diverse
- Maintain and manage range land according to ecosystem management principles within the limits of its sustainable carrying capacity.
- Reduce current and historic forest ingrowth in areas with high quality range capability
- Control noxious weeds to maintain range land values including forage, shrub and tree production and biodiversity
- Manage vehicle use on range land to minimize negative effects on range land values
- Provide opportunities for existing agricultural operations to improve their viability through expansion onto Crown land
- Maintain opportunities for water allocation for agricultural uses
- Integrate grazing objectives with operational timber management activities
- Minimize conflicts between livestock and wildlife (both ungulates and predators)
- Livestock use of riparian areas will comply with current and relevant legislation and regulation

- Manage riparian areas to maintain proper functioning condition as provided in Section B.9.1
- Agricultural use will be sensitive to identified wildlife habitats as provided in Section B.9.7.

Resource objectives:

Objective 5.0.1

Manage livestock grazing in the Wigwam and Flathead River watersheds (Landscape Units C14 – C18) to ensure forage quality, productivity and availability for wildlife.

Objective 5.0.2

Maintain livestock grazing at 500 Animal Unit Months or less for low-intensity horse, mule and donkey use associated with Guide Outfitter and/or backcountry tourism operations in the Wigwam and Flathead River watersheds (Landscape Units C14 – C18). Livestock grazing is subject to terms and conditions of approved grazing tenures, licences and permits issued under existing legislation, regulations and guidebooks as amended periodically by regulatory agencies. "Livestock" and "Animal Unit Months" have the same meaning as in the *Range Act*.

Objective 5.0.3

Increases in Animal Unit Months for livestock grazing under the *Range Act* in alpine grassland ecosystems (AT, ESSFwmp and ESSFdkp) are subject to the recommendation of a registered professional biologist or registered professional agrologist, indicating that conservation objectives, as defined in Chapter B.9.0, of this plan can be met. Grazing by domestic sheep, goat and llama are not permitted in identified Rocky Mountain bighorn sheep or mountain goat range.

Objective 5.0.4

Encourage livestock to use areas other than OGMAs and MSMAs as per Section B.9.2 and Map B.9.2.1.

Best Management Practices:
Range Use Plan Guidebook October (MOF, 2000)
Relevant sections within the *Riparian Management Area Guidebook (MOF, 1995)*
Range Land Handbook for BC (BC Cattlemen's Association, 1998)

Economic benefits and opportunities:
- Diversified agriculture industry
- Guest ranches
- Livestock grazing
- Agroforestry
- Noxious weed control
- Riparian management

Measures of success:
- Crown land available for agricultural use
- Increased productivity of Crown lands used for agriculture

- New sources of water for agriculture identified
- Livestock losses due to predators minimized
- Forest ingrowth on high quality range reduced
- New opportunities for livestock grazing on Crown range identified
- High quality forage available
- Healthy and contiguous range lands
- Riparian areas in proper functioning condition within range agreement areas
- Timber management practices that enhance forage production
- Water quality in community watersheds with livestock grazing maintained
- Noxious weeds controlled
- Range land values impacts by recreational and industrial access minimized
- Sustainable populations of wildlife

Maps:
B.5.1 Agriculture Land Reserve

B.6.0 TRAPPING

Licensed traplines lie within or partially within the plan area including one First Nations trapline that crosses into both the Flathead and Wigwam watersheds. There are also several private land traplines whose activity may influence those on Crown land.

Issues:
- Trapping is seasonal and generally a secondary source of income with potential for higher returns a function of consumer and market demand, harvesting effort and wildlife numbers
- The viability of the industry is dependent on the health of the wildlife and their associated habitats
- Public attitudes regarding trapping tend to be negative
- Increased access development may result in over-harvest of fur-bearers
- Lack of selective trapping techniques may adversely affect species with low reproductive capability or rare/endangered species
- Access to traplines is an important issue for the sector
- Private land traplines may influence the activity of licensed traplines on Crown land

Intent:
- Maintain a viable trapping industry in the plan area subject to provisions in the *Wildlife Act*
- Manage fur-bearing animals as defined in the *Wildlife Act* and their habitat to maintain population levels that are sustainable and provide opportunities for harvest
- Trapping will be sensitive to the conservation intent and objectives expressed in Chapter B.9.0 for riparian areas, old growth, wildlife trees, connectivity corridors, and identified wildlife
- Motorized recreation restrictions (Section B.7.1) do not apply to licensed trappers who are engaged in activities related to their tenures
- Consider existing traplines in issuing tenures for commercial recreation and permits for resource development
- Manage trapline cabins and their use according to guidelines as established by the Ministry of Water, Land and Air Protection or appropriate agency
- Improve selective trapping strategies and techniques

Resource objective:

Objective 6.0.1

Maintain the trapping industry by permitting up to 24 licensed traplines in the plan area.

Economic benefits and opportunities:
- Fur tanning
- Manufacturing of fur items
- Tourist gift items
- Taxidermy
- Wildlife viewing

Measures of success:
- Best available information is used in resource development and management plans
- Improved information about fur bearing animals and their habitat
- Sustainable harvest of fur bearing animals
- Rare fur bearer species not impacted
- Economically viable industry

B.7.0 RECREATION

B.7.1 Recreation Management Strategy (RMS)

Over the past decade the plan area has experienced a significant increase in the level of wilderness-based recreation. Changes in technology, the evolution and increasing diversity of outdoor recreational pursuits, increasing publicity of the region's wilderness attributes, proximity to major urban centres, demographic changes (i.e. an influx of lifestyle migrants) and relatively low real-estate prices have all contributed to this growth.

It is likely that with increasing popularity of the area, this trend will continue for the foreseeable future. Such growth offers significant economic opportunities through expansion of the recreation industry and related service sector. To realize these opportunities competing demands among recreational user groups, along with environmental impacts, must be addressed.

The results of a multi-stakeholder consultation process that provided direction to this Chapter are found in Appendix 17.0.

Issues:
- Conflicts between competing recreational and environmental interests are on the increase.
- There is a need to balance recreational demands between area residents and visitors
- Wildlife, fisheries and aesthetic values need to be conserved in order to sustain quality of recreational experiences
- There are concerns over the implications of commercial recreation
- Mechanisms to determine and allocate recreation carrying capacity are currently inadequte

- There is a lack of education and enforcement capacity concerning recreational access management
- Additional detailed work may be required beyond these objectives to address locally specific issues, including indicators and standards for limits of acceptable change

Intent:

- Promote a diversified, quality recreation experience and a viable economic, social and environmental future
- Balance recreation and recreation development based on appropriate spatial distribution and timing of such activities to reduce conflicts between recreational groups and the potential for environmental damage
- Ensure consistent application of management direction for both commercial and public recreation
- Guide the development of new commercial recreation opportunities on Crown land within the planning area
- In applying objectives 7.1.1 and 7.1.2 the following factors must be considered:
    - current commercial recreation tenures issued prior to January 1, 2003 will be unaffected by these objectives; however modifications made to these tenures after January 1, 2003 will need to be consistent with the objectives
    - industrial access (including that needed for forestry, subsurface resource exploration and development, agriculture/ranching, and trapping) is not constrained by these objectives
- Development of recreational facilities will be guided by objectives in Chapter B.9.0
- Provincial Crown land will not be set aside in the plan area for the purposes of establishing a route for the Trans-Canada Trail

Resource objectives:

Definitions

The objectives contained in this section use the following coding and definitions to describe the Recreation Management direction for the plan area:

Recreation Access (RA) (Ground based, summer/winter)

RA1: areas or corridors available for non-motorized recreation

RA2: areas or corridors available for motorized recreation with specific limitations for timing and/or location

RA2.1: areas or corridors available for snowmobile use only.

RA2.2: areas or corridors open for snowmobile use after a specified date.

RA3: areas or corridors available for motorized and non-motorized recreation.

Recreation Access (RH) (Aerial based, summer/winter)

RH1: areas that have a very high environmental or social sensitivity to aerial landings. Landings within areas with areas designated as RH1 are to be discouraged.

RH2: areas that have a high environmental or social sensitivity to aerial landings. Use levels are low to moderate. Landings within areas designated as RH2 will be limited based on frequency, location and timing.

RH3: areas that have no identified constraints to aerial landings. No limitations to frequency, location or timing within areas designated as RH3.

Recreation Management/Development (RM) (summer/winter)

RM1: areas where the lowest levels of recreational infrastructure and use should occur. Informal structures are acceptable to facilitate existing and approved uses or to mitigate environmental impacts. Low to moderate incidence of managerial presence.

RM2: areas where low to moderate levels of recreational infrastructure and use should occur. Formal structures may be acceptable in specific locations. Moderate incidence of managerial presence.

RM3: areas where moderate to high levels of recreational infrastructure and use should occur. Accommodation structures and other permanent structures are acceptable in specific locations. Moderate to high incidence of managerial presence.

RM4: areas where moderate to high levels of recreational infrastructure and use currently exist. Accommodation structures and other permanent structures are present. No new structures acceptable, as maximum limit to non-industrial change has been achieved. High incidence of managerial presence.

Objective 7.1.1

Manage recreation in the plan area according to the requirements of Table B.7.1.1, Table B.7.1.2, Map B.7.1.1 and Map B.7.1.2.

- **Summer ground-based motorized recreation is permitted on designated roads and trails only (refer to Table 7.1.1 and Map B.7.1.1). No off-road (overland) summer motorized recreation is permitted within the plan area.**
- **Winter ground-based motorized recreation will be permitted within the plan area as identified in Table 7.1.1 and Map B.7.1.2). Ground-based motorized recreation on frozen water bodies is permitted within areas designated as RA2, RA2.1, RA2.2 and RA3.**
- **Summer motorized water recreation is permitted in accordance with existing regulations established under federal Navigable Waters Act, the British Columbia Wildlife Act and the British Columbia Fisheries Act.**

Table B.7.1.1 Recreation Management Objectives for ground-based access

Landscape Unit	*Winter* (the period of December 15 to April 14)	Summer (the period of April 15 to December 14)
LU 14	• RA2: motorized recreation permitted on "East Side" road (refer to Map B.7.1.2) • RA1: for remaining area within LU14	• RA2: motorized recreation permitted on "East Side" road and Galton Pass road (refer to Map B.7.1.1) • RA1: for remaining area within LU14
LU 15	• RA3: for Lodgepole, Wigwam and Bighorn forest roads • RA1: within existing AMA's, identified ungulate winter range, alpine ridges and basins north of Bighorn Creek and south of Lodgepole Creek and the ridge and slopes northwest of Cabin Pass. • RA2: for remaining areas within LU15 (open for motorized recreation from	• RA3: for Lodgepole, Wigwam and Bighorn forest roads • RA2: motorized recreation permitted on identified road network north of Cabin Pass, road through Wigwam Flats and minor roads in Bean/Pioneer Creeks and South Lodgepole Creek (refer to Map B.7.1.1) • RA1 for remaining area within LU15

	Dec. 15 to April 14)	
LU 16	• RA3: for Flathead River road, Harvey Creek road, Cabin Creek road and Couldrey Creek Road • RA2.2: recreational snowmobile permitted after March 15 for Shepp Creek south to Harvey Creek and Fuel Creek south to Howell Creek (refer to Map B.7.1.2) • RA1 for remaining area within LU16	• RA3: for Flathead River road, Harvey Creek road, Cabin Creek road and Couldrey Creek Road • RA2: motorized recreation permitted on identified roads for Howell Creek and as identified in areas of high road density for Couldrey Creek, north and south of Cabin Creek, Twentynine Mile Creek and upper Howell/Kisoo Pass (refer to Map B.7.1.1) • RA1 for remaining area within LU16
LU 17	• RA3: for main Flathead road, McLatchie Creek road • RA1 for all identified ungulate winter range (refer to Map B.7.1.2) • RA2: motorized recreation permitted as identified for McEvoy road (refer to Map B.7.1.2) through ungulate winter range and for all areas remaining area within LU17	• RA3: for main Flathead road, McLatchie Creek road • RA2: motorized recreation permitted as identified for road to north-west of Mt. Corrigan connecting to Sqaw Creek, gas pipeline Right-of-way, upper McEvoy Creek and lower Pincher Creek (refer to Map B.7.1.1) • RA1 for remaining area within LU17
LU 18	• RA3: for main Flathead road to kilometer 94 (refer to Map B.7.1.2) • RA2: motorized recreation permitted as identified for Proctor, Kishenina, Sage, Commerce, Middlepass and Cato Creek roads (refer to Map B.7.1.2) • RA1 for remaining area within LU18	• RA3: for main Flathead road to kilometer 94 (refer to Map B.7.1.1) • RA2: motorized recreation permitted as identified for Proctor, Kishenina, Sage, Commerce, Middlepass and Cato Creek roads (refer to Map B.7.1.1) • RA1 for remaining area within LU18
LU 23	• RA3: as identified for Weigert Creek and Crossing Creek roads (refer to Map B.7.1.2) • RA2.1: recreational snowmobiling permitted as identified in the entire Bingay and Weigert Creek valleys (refer to Map B.7.1.2) • RA1 as identified for Boivin and Brule valleys and for ungulate winter range (refer to Map B.7.1.2) • RA2 for remaining area within LU23	• RA3: as identified for Weigert Creek and Crossing Creek roads (refer to Map B.7.1.1) • RA2: motorized recreation permitted as identified for Cummins Creek and lower Brule Creek roads (refer to Map B.7.1.1) • RA1 for remaining area within LU23
LU 24	• RA3: as identified for Hartley Creek, McCool Creek and Lladnar Creek roads (refer to Map B.7.1.2) • RA2.2: recreational snowmobiling permitted after March 15 as identified from Fairy Creek to Hartley Creek and for the Lizard Range (refer to Map B.7.1.2)	• RA3: as identified for Hartley Creek, McCool Creek and Lladnar Creek roads (refer to Map B.7.1.1) • RA2: as identified below the powerline on the west side of the valley, parallel to the highway, and the top end of Lladnar Creek (refer to Map B.7.1.1)

	• RA1 as identified for ungulate winter range (refer to Map B.7.1.2) • RA2 for remaining area within LU24	• RA1 for remaining area within LU24
LU 25	• RA2.2: recreational snowmobiling permitted after March 15 as identified on the heights of land south of Sand Creek, McDermid Creek and Lizard Creek (refer to Map B.7.1.2) • RA1 as identified for ungulate winter range (refer to Map B.7.1.2) • RA2 for remaining area within LU25	• RA2: motorized recreation permitted as identified on the Sand Creek, Little Sand Creek, McDermid Creek Whimster Creek and Caithness Creek roads (refer to Map B.7.1.1) • RA2: motorized recreation permitted as identified in the Caithness Valley and in the area below Sand Creek and Little Sand Creek (refer to Map B.7.1.1) • RA1 for remaining area within LU25
LU 26	• RA3: as identified for the Bull river and Sulphur Creek Roads (refer to Map B.7.1.1) • RA2.2: recreational snowmobiling permitted after March 15 as identified on the heights of land south of Hartley Pass (refer to Map B.7.1.2) • RA1 as identified for ungulate winter range (refer to Map B.7.1.2) • RA2 for remaining area within LU26	• RA3: as identified for the Bull river and Sulphur Creek Roads (refer to Map B.7.1.1) • RA2: motorized recreation permitted as identified on the Iron Creek road and Hartley Pass area (refer to Map B.7.1.1) • RA1 for all remaining areas in LU 26
LU 27	• RA3: as identified for the Bull river and the road east to Crossing Creek (refer to Map B.7.1.2) • RA1: as identified for ungulate winter range and the Norboe valley (refer to Map B.7.1.2) • RA2 for all remaining areas in LU 27	• RA3: as identified for the Bull river and the road east to Crossing Creek (refer to Map B.7.1.1) • RA2: motorized recreation permitted as identified on the Quinn Creek road and roads into the four identified side valleys (refer to Map B.7.1.1) • RA1 for all remaining areas in LU 27

Table B.7.1.2 Recreation Management Objectives for development and aerial access

Landscape Unit	**Winter** (the period of December 15 to April 14)		**Summer** (the period of April 15 to December 14)	
	Intensity / Development	***Aerial Access***	***Intensity / Development***	***Aerial Access***
LU 14	RM1	RH1	RM1	RH1
LU 15	RM2 specific sites	RH1	RM2 specific sites	RH1
LU 16	RM2	RH1	RM1	RH1
LU 17	RM2	RH1	RM1	RH1

LU 18	RM1	RH1	RM1	RH1
LU 23	RM2 with RM1 in designated areas	RH1	RM1 with RM2 for existing legal structures	RH1
LU 24	RM3 in specific identified locations	RH2 specific identified landing sites (refer to Map B7.1.2)	RM3 in specific identified locations	RH2 specific identified landing sites (refer to Map B7.1.1)
LU 25	RM2	RH2 specific identified landing sites (refer to Map B7.1.2)	RM2	RH2 id. landing sites and flight paths & RA1 (refer to Map B7.1.1)
LU 26	RM2 in defined areas below 5000' rest RM1; planned trails only	RH1	RM2 in defined areas below 5000' rest RM1; planned trails only	RH1&RH2 near LU24 for identified landings (refer to Map B7.1.1)
LU 27	RM2 structures below 5000'; RM1 in Norboe	RH1	RM2 with RM1 in Norboe	RH1

Objective 7.1.2

In the plan area, allow motorized access, required to maintain or develop approved trails and facilities associated with a non-motorized recreation tenure or permit, within a zone designated as non-motorized by this plan (see Maps B.7.1.1 and B.7.1.2) only when authorized by the appropriate approval agency.

Objective 7.1.3

At existing informal, unmanaged locations in the plan area where summer ground-based motorized recreation has occurred prior to January 1, 2003 (e.g., water access sites, campsites, road pullouts), motorized use is permitted. Motorized use is limited to hard, stable surfaces within 200 metres of the noted motorized corridor.

Objective 7.1.4

Manage BCFS Recreation Sites and Trails within the plan area as provided in Table B.7.1.3

Where a BCFS Recreation Site or BCFS Recreation Trail (as listed in Table B.7.1.3) is located within an RA1 (non-motorized) area but is currently managed for motorized accessibility, such use may continue subject to motorized access to the site or trail occurring on the existing hardened surface used to access the site, or trail, prior to January 1, 2003.

Table B.7.1.3: BC Forest Service Recreation Sites and Trails

Project Name	Type	Size ha.	Length km.	Objectives
40 Mile Camp/Bull River	Site	4.0		Provide a riverside, roaded recreation experience. Maintain a campsite; conserve the shoreline and natural vegetation. Provide opportunities for camping and picnicking.
Aldridge Creek West	Site	1.0		Provide a riverside, roaded recreation experience. Maintain a campsite; conserve the shoreline and natural vegetation. Provide opportunities for camping, picnicking and equestrian use.
Baldy Lake Trail	Trail	8.0	4.9	Provide a forested/subalpine, semi-primitive non-motorized recreation experience. Maintain the trail; conserve the adjacent vegetation. Provide opportunities for hiking, viewing, equestrian use and primitive camping.
Boivin Creek Trail	Trail	7.0		Provide a forested, semi-primitive non-motorized recreation experience. Maintain the trails and day use shelters; conserve adjacent vegetation. Provide opportunities for cross country skiing, hiking, mountain biking and equestrian uses. Provide non-motorized recreation access on designated trails except for trail maintenance, grooming or track setting activities.
Fairy Creek Trail	Trail	6.0	2.9	Provide a forested, semi-primitive non-motorized recreation experience. Maintain the trail; conserve adjacent vegetation. Provide opportunities for hiking and viewing.
Forsyth/Quarrie	Site	16.0		Provide a forested /creekside, roaded recreation experience. Maintain a campsite; conserve the shoreline and natural vegetation. Provide opportunities for camping, picnicking, hiking, mountain biking and equestrian use.
Frozen Lake	Site	1.0		Provide a lakeshore, semi-primitive motorized recreation experience. Maintain a campsite; conserve the shoreline and natural vegetation. Provide opportunities for camping, day use, picnicking and boat launching.
Hartley / Sulphur Trail	Trail	256.0	30.0	Provide a forested, roaded recreation experience. Locate seasonal snowmobile trails within natural openings and on existing out of service roads and trails. Maintain winter trails; conserve adjacent vegetation. Provide opportunities for snowmobile access, snowmobiling and viewing.
Hartley Lake	Site	18.0		Provide a lakeside, roaded recreation experience. Maintain a day use site; conserve the shoreline and natural vegetation. Provide opportunities for day use, picnicking and boat launching.
Hornaday Pass Trail	Trail		14.0	Provide a forested, semi-primitive non-motorized recreation experience. Maintain as a heritage trail; conserve adjacent vegetation. Provide opportunities for hiking, viewing, mountain biking, equestrian use and primitive camping.
Howell Creek	Site	1.0		Provide a creekside, roaded recreation experience. Maintain a campsite; conserve the shoreline and natural vegetation. Provide opportunities for camping, day use and picnicking.
Krivinsky Farm	Site	30.0		
Lower Harvey Creek	Site	3.0		Provide a creekside, roaded recreation experience. Maintain a campsite; conserve the shoreline and natural vegetation. Provide opportunities for camping, day use and picnicking.
Matevic Trail	Trail	31.0	15.7	Provide a forested, rural recreation experience. Maintain the trail; conserve adjacent vegetation. Provide opportunities for hiking, viewing and mountain biking.
Mountain Walk Trail	Trail	14.0	6.4	Provide a forested, semi-primitive non- motorized recreation experience. Maintain the trail; conserve the adjacent vegetation. Provide opportunities for hiking and day use.

Mt Fernie Trail	Trail	8.0	4.1	Provide a forested/subalpine, rural recreation experience. Maintain the trail; conserve adjacent vegetation. Provide opportunities for hiking, viewing, mountain biking equestrian and all terrain vehicle use on the lower portion of the trail. Provide opportunities for hiking and viewing on the upper portion of the trail.
Narboe Creek	Site	4.0		Provide a forested, roaded recreation experience. Maintain a campsite; conserve the shoreline and natural vegetation. Provide opportunities for camping, day use and picnicking.
Pollock Creek	Site	1.0		Provide a creek side, roaded recreation experience. Maintain a campsite; conserve the shoreline and natural vegetation. Provide opportunities for camping, day use and picnicking.
Proctor Lake	Site	8.0		Provide a lakeshore, semi-primitive motorized recreation experience. Maintain a campsite; conserve the shoreline and natural vegetation. Provide opportunities for camping, day use, picnicking and boat launching.
Ram Cabin Pass	Site	.25		Provide a forested, semi primitive motorized recreation experience. Provide and maintain a shelter; conserve the natural vegetation. Provide opportunities for snowmobiling, snowmobile assisted skiing and snowboarding and hut accommodations during the winter season.
Riverside	Site	1.0		Provide a forested, roaded recreation experience. Maintain a campsite; conserve the shoreline and natural vegetation. Provide opportunities for camping and picnicking.
Sage Creek	Site	12.0		Provide a creekside, roaded recreation experience. Maintain a campsite; conserve the shoreline and natural vegetation. Provide opportunities for camping, day use and picnicking.
Snowshoe Lake Trail	Trail	2.0	2.1	Provide a forested/lakeside, semi-primitive non-motorized recreation experience. Maintain the trail; conserve adjacent vegetation. Provide opportunities for hiking, day use and primitive camping.
Sulphur Creek	Site	1.0		Provide a creekside, roaded recreation experience. Maintain a campsite; conserve the shoreline and natural vegetation. Provide opportunities for camping and picnicking.
Three Sisters Trail	Trail	18.0	9.0	Provide a subalpine, semi-primitive non-motorized recreation experience. Maintain the trail; conserve adjacent vegetation. Provide opportunities for hiking and viewing.
Trail Seven	Trail		6.2	Provide motorized recreation trails. Maintain the trail; conserve adjacent vegetation.
Tobermory	Site	1.0		Provide a forested, roaded recreation experience. Maintain a campsite and cabin; conserve the shoreline and natural vegetation. Provide opportunities for camping, day use and picnicking.
Upper Elk River	Site	33.0		Provide a creekside meadow, roaded recreation experience. Maintain a campsite; conserve the shoreline and natural vegetation. Provide opportunities for camping, day use and picnicking.
Upper Harvey Creek	Site	1.0		Provide a forested, roaded recreation experience. Maintain a campsite; conserve the shoreline and natural vegetation. Provide opportunities for camping, day use and picnicking.
Weary Creek	Site	8.0		Provide a riverside side, roaded recreation experience. Maintain a campsite; conserve the shoreline and natural vegetation. Provide opportunities for camping and picnicking.
Wigwam Lookout Trail	Trail	6.0	5.8	Provide a forested, semi-primitive motorized recreation experience. Maintain the trail; conserve adjacent vegetation. Provide opportunities for hiking, viewing, mountain biking and all terrain vehicle access.

Best management practices:

Interim Wildlife Guidelines for Commercial Backcountry Recreation in British Columbia (MWLAP, 2002)

Recreation Management Objectives for the Elk Valley, Draft Report (Beardmore and Kaegi, 2002) – where appropriate

Economic benefits and opportunities:
- Increased revenues and profitability for the local recreation service sector
- Establishment of new recreation service businesses

Measures of success:
- Active participation in the delivery of the RMS by community and recreation organizations
- Recreation activities occurring within defined carrying-capacity thresholds where available
- Increased levels of cooperation between the various recreational interests and environmental organizations
- Acceptable levels of impact on conservation values

Maps:
B.7.1.1 Recreation Access Summer
B.7.1.2 Recreation Access Winter
E.7.1.1 Recreation Access Summer by Landscape Unit
E.7.1.2 Recreation Access Winter by Landscape Unit

B.7.2 Resident Hunting and Angling

Resident hunting and angling have been important historical activities throughout the Kootenay region and continue to remain popular recreational pursuits in the East Kootenay. Hunting and fishing regulations, including restricted areas, are set annually by MWLAP and can be found at http://wlapwww.gov.bc.ca/wld/hunting.htm

Issues:
- Viable ungulate, wide-ranging carnivore and fish populations and their habitats need to be maintained
- Hunting is becoming less socially acceptable
- Competing demands for the landbase, including among recreational users, are impacting the ability to have a quality hunting and fishing experience
- Competition is increasing among residents, commercial big game and fish guides and non- residents for the same resources
- The rapid increase in non-consumptive recreational use may result in increased conflicts between hunters and non-hunters

Intent:
- Ensure that hunting and fishing opportunities are perpetuated subject to all pertinent regulations
- Maintain resident hunting and fishing opportunities within the plan area
- Access for hunting and fishing activities will be consistent with the Recreation Management Strategy (see Section B.7.1.)

Economic benefits and opportunities:
- Business associated with livestock, ie. horse sales, feed, tack, farriers and veterinarians
- Vehicle, ATV, boat, and trailer sales, fuel, maintenance and repairs
- Provisions, ie. food, clothing, hunting and fishing supplies and accessories
- Meat and fish processing
- Taxidermy

Measures of success:

- Diversified and quality hunting and fishing opportunities remain available.
- The opportunities to view or harvest wildlife and fish remain available.

B.8.0 TOURISM

B.8.1 General Tourism

The plan area and its vicinity support a diverse tourism sector ranging from front-country resorts and hospitality services to a variety of wilderness-related products. Wilderness-related products fall under three general sectors: hunting guide-outfitting, angling guiding and adventure travel.

The area's exceptional mountain setting, and its proximity to major markets and an international gateway, are the primary ingredients to the rapid growth of the tourism sector in recent years. This trend offers obvious economic opportunities, but it must be managed to ensure that the attributes that make the area appealing are not compromised to the detriment of the tourism sector.

Issues:

- There is increasing recreational and industrial activity in the backcountry resulting in increasing levels of conflict among users
- Rapid growth of settlements (in particular recreational residential properties) is placing additional pressure on the backcountry
- Sustaining wildlife, fisheries and wilderness values is essential to maintaining and growing the tourism industry
- Viability and prosperity of the existing tourism sectors needs to be maintained while managing increasing demands for new business opportunities in this sector
- The requirements of the various types of tourism businesses need to be integrated and balanced
- Recreation carrying capacity is difficult to measure and implement
- Education, monitoring and enforcement tools are needed

Intent:

- Maintain and strengthen a diverse tourism sector
- Increase length of stay and yield per visitor unit
- Development of tourism facilities, and tourist recreational access, will be guided by Resource objectives in Chapter B.9.0 and Section B.7.1 respectively.
- Ensure the development of a healthy and diverse tourism industry by sustaining key conservation values and ensuring that new tourism development does not compromise these values
- Reduce the level of conflict between the tourism sector and the public recreation and environmental sectors by ensuring tourism operations are managed in an environmentally appropriate manner and opportunities for tourism and public recreation activities are equitable
- Integrate and balance the needs of the various tourism sectors and ensure new tourism development is compatible with existing tourism activities
- Scenic wilderness and visual resources will be managed to support the development of the tourism sector (see Chapter B.11.0)

- Cultural heritage resources will be managed to respect the cultural and spiritual values of the First Nations people and to ensure that the tourism-related economic opportunities of these values are retained for the benefit of the First Nations people
- Manage tourism within acceptable carrying-capacity limits using best available information
- Backcountry commercial recreation tenures and tourism-related development within the plan area will be consistent with the Recreation Management Strategy (see Section B.7.1)

Resource objectives:

Objective 8.1.1

Discourage helicopter-dependent commercial recreation tenures within the plan area.

Best management practices:
Interim Wildlife Guidelines for Commercial Backcountry Recreation in B.C. (MWLAP 2002)
Industry-established code of conduct (WTA)
Alpine ski-industry best management practices

Economic benefits and opportunities:
- New tourism businesses and product lines
- Expansion of existing tourism businesses and product lines
- Increased community economic diversity and strength
- Long-term, sustained economic benefits from the growth of this sector will be realised by managing the resources and opportunities to:
- An increased yield per unit resulting from a high quality of experience
- Enhanced profile for the area resulting in increase in growth of service industries

Measures of success:
- Increased contribution of the tourism sector to area and provincial economy
- Increased tourism sector investment in the area
- Reduced levels of conflict between the tourism sector and recreation/environment sectors
- Growth in local service industry

B.8.2 Adventure Travel

The adventure travel sector encompasses a wide range of guided and independent tourism products including: ski-touring, alpine skiing, snowmobiling and ATV touring, horseback riding, hiking, mountain biking, back-country camping, mountaineering, wildlife viewing, and rafting.

With some parts of the plan area receiving an average snowfall of 10 metres per year, winter-related adventure travel has seen the most dramatic growth for the tourism industry in recent years, particularly in the Fernie area.

Issues:
- Rapid growth of the adventure travel sector is causing increased pressure on the wilderness resource
- New entrants to the sector may lack the experience, resources, and knowledge required to be successful
- There is a perception that businesses in this sector will displace residents' recreational use

- Overlapping tenures may place too much pressure on natural resources and reduce sector viability
- Overlapping activities within the sector may not be compatible
- There is an increasing level of conflict between the adventure travel sector and other tourism businesses, environmental groups and public recreationists

Intent:

- Foster the development of the adventure travel sector to benefit and diversify the local communities
- Increase length of stay and yield per visitor unit
- Manage scenic values to support the adventure travel sector (See Chapter B.11.0)
- Manage wildlife and fishery values to ensure viable healthy populations that support the adventure travel sector (see Chapter B.9.0)
- Reduce the level of conflict between the adventure travel sector and other sectors of the tourism industry
- Reduce the level of conflict between the adventure travel sector and the public recreation and environmental sectors
- Ensure the viability of adventure travel businesses in the plan area
- Backcountry Commercial Recreation tenures and tourism-related development within the plan area will be consistent with the Recreation Management Strategy (see Section B.7.1)
- Discourage helicopter-dependent commercial recreation tenures within the plan area (see Section B.8.1)

Best management practices:

Interim Wildlife Guidelines for Commercial Backcountry Recreation in British Columbia (MWLAP, 2002)
Industry established code of conduct (WTA)
Alpine ski-industry best management practices

Economic benefits and opportunities:

- Rapid development of a diversity of new businesses in the sector
- Expansion of established adventure travel businesses
- Adventure travel motion picture films in the plan area
- Development of higher-end amenity services benefiting residents and visitors alike
- Development of an expanded service industry to support the adventure travel sector

Measures of success:

- Increased contribution of adventure travel to area and provincial economy
- Increased sector investment in the area
- Increased levels of cooperation between the sector and recreation/environment sectors

B.8.3 Guide-outfitting

In the East Kootenays, big game guide-outfitting has been a traditional occupation with a history dating back to the late 1800's (Appendix 24.0). There are currently seven mutually-exclusive guide-outfitting tenures within the plan area. These tenures cover the entire planning area excluding the northern portions of Landscape Unit C23.

Issues:

- Declining habitat availability and suitability have potential adverse impacts on wildlife population levels
- The viability of the industry is dependent on the health of the wildlife and their associated habitats
- Increased access to, and use of, the backcountry have:
    - increased wildlife harassment and displacement
    - affected harvesting success
    - reduced the quality of the guided hunting experience
    - reduced the opportunity to provide a remote wilderness experience
- Hunting is becoming less socially acceptable and may negatively impact guide-outfitting businesses
- Overlapping tenures for commercial recreation activities may not be compatible
- There are resource-use conflicts between resident hunters and guide-outfitters
- Introduction of diseases from livestock and domestic pack animals may adversely impact ungulate species

Intent:

- Maintain the resource base to provide for an economically-viable guide-outfitting industry
- With the exception of areas closed to hunting under the *Wildlife Act* or other regulations, continue the opportunity for big game guided hunting in the plan area
- Manage the guide-outfitting industry in a manner that sustains wildlife populations, subject to all pertinent regulations
- Access for guide-outfitting will comply with the Recreation Management Strategy (Section B.7.1)
- Eliminate potential for parasite and disease transfer from domestic livestock to wildlife

Resource objectives:

Objective 8.3.1

Maintain the distribution of guide-outfitting territories in the plan area as per Map B.8.3.1. No new guide-outfitting territories will be created nor will existing territories be expanded into Landscape Unit 23.

Economic benefits and opportunities:

- Business associated with livestock, ie. horse sales, feed, tack, farriers and veterinarians
- Vehicle, ATV, boat, and trailer sales, fuel, maintenance and repairs
- Provisions, ie. food, clothing, hunting and fishing supplies and accessories
- Meat and fish processing
- Taxidermy

Measures of success:

- The industry continues to provide a quality and successful experience to clients
- The industry remains stable and economically viable
- The wildlife attributes and characteristics of the land necessary to sustain the industry are maintained
- The industry continues to provide economic benefits to the Provincial treasury and the local economy
- The industry continues to provide employment opportunities

Maps:
B.8.3.1 Guide-Outfitter Territories

B.8.4 Angling Guiding

Guided angling has experienced a rapid growth in popularity and numbers particularly within the Bull and Elk River systems which support significant populations of west-slope cutthroat trout and bull trout. These species are considered to be high value sport fish for angling.

A Provincial review process of "Angling Guide Management System and Classified Waters" is being conducted.

Issues:

- Levels of angling pressure on a limited fishery are increasing
- The quality of angling experience may be diminishing as a result of increased fishing pressure with potential impacts on the tourist industry and for local recreationists
- There have been increasing conflicts among resident anglers, non-resident anglers and angling guides
- There are limited regulatory tools to control the number of angling-guides operating in a given area
- There is increasing competition between resident B.C. guide anglers and angler guides residing in Alberta
- Post-hooking mortality is associated with intensive catch and release angling pressure
- Key industry species, west-slope cutthroat trout and bull trout, are blue-listed in BC. Bull trout is also listed as endangered in the neighbouring American jurisdictions.
- There is no legislation or regulation to manage location and maintenance of access/egress sites

Intent:

- Maintain a diverse, healthy and self-sustaining fishery
- Maintain a quality recreation fishing experience
- Balance the demand among resident anglers, non-resident anglers and angling guides
- Reduce the level of angling guide pressure within the plan area to maintain viable angling-guide businesses
- Manage the angling guide sector in a manner that sustains fisheries and the angling experience
- Fish populations and habitat will be managed to ensure viable healthy populations in support of the angling guide industry (see Section B.9.10)
- A commercial recreation tenure will be required by angling guides for use of river access points on Crown land
- Limit the number of commercial recreation tenures for angling guides to ensure sustainability of the resource, a high-quality angling experience and viable angling businesses
- Recreation access direction, as provided in the Recreation Management Strategy (Section B.7.1), will apply to angling guides

Resource objectives:

Objective 8.4.1

Commercial recreation tenure areas that provide access and egress sites to rivers, lakes and creeks for angling will be kept in a clean and sanitary condition.

Economic benefits and opportunities:

- Continuation of a high-value fishery
- Economically strong and dynamic guide businesses
- Guide supplies
- Client accommodations and travel
- Taxidermy
- Fish processing

Measures of success:

- The industry continues to provide a quality and successful experience to clients
- Angling-guide businesses are more economically viable and generate stable employment
- Reduced levels of conflict between angling-guides and resident anglers

B.9.0 CONSERVATION

B.9.1 Riparian

Riparian ecosystems typically exemplify a rich and diverse vegetative mosaic reflecting the influence of available surface water such as rivers, streams, bogs, seeps, wet meadows, swamps and lakes (Appendix 24.0). Riparian habitats are extremely important to the maintenance of healthy aquatic and terrestrial ecosystems, which in turn influence community health and the local economy. The inherently high productivity and diverse structural and functional attributes of riparian ecosystems contribute to the movement, foraging and reproductive requirements for many indigenous and migratory species of invertebrates, reptiles, amphibians, mammals and birds.

Issues:

- International water values need to be retained
- Water quality and quantity in community and domestic watersheds need to be retained
- Increasing and largely uncontrolled industrial, commercial and public access may significantly impact riparian areas
- Riparian areas may be impacted as a result of the following activities:
    - Livestock grazing
    - Forest health management
    - Hydro-electric development
    - Subsurface resource exploration and development
    - Recreational facility development and use
    - Guided, river-based fishing or rafting
- A riparian conservation and regional lake classification management plan is lacking
- No regional monitoring program for riparian areas exists

Intent:

- Maintain riparian habitat in a proper functioning condition (see Best Management Practices)
- Manage public and commercial recreational access as per the Recreation Management Strategy (see Section B.7.1) in order to maintain riparian habitat effectiveness and proper functioning condition
- Employ management principles (Appendix 24.0) that maintain habitat effectiveness including:
    - riparian habitat integrity and continuity

  - terrain, bank and channel stability
  - water quality, quantity and timing of flow
  - the natural distribution, movement, foraging and reproduction opportunities of wildlife species and populations that depend on riparian ecosystems
  - structural attributes and species composition which contribute to landscape-level habitat diversity and proper functioning condition characteristics (Appendix 24.0)
- Manage riparian for late succession deciduous, coarse woody debris attributes and coniferous old growth, through the application of biodiversity management objectives (Appendix 24.0)
- Livestock use of riparian areas will be in compliance with existing legislation and regulations

Resource objectives:

Objective 9.1.1

Riparian management and reserve zones are assigned for rivers, streams, lakes and wetlands in the plan area as shown on Map B.9.1.1

Objective 9.1.2

Within the Flathead Enhanced Riparian Zone in the plan area (Map B.9.1.1):
- **Maintain existing locations of roads and river crossings**
- **New road construction except for temporary skid trails or access trails necessary for approved resource development and extraction are not permitted**
- **New river crossings are not permitted**
- **Roads no longer needed will be fully reclaimed**
- **New facility construction or expansion of existing facilities is not permitted**

Objective 9.1.3

Within the Riparian Management Zone for rivers, streams, lakes and wetlands in the plan area (Map B.9.1.1):
- **River and stream crossings will be kept to the minimum required for resource development and extraction**
- **Roads no longer needed will be fully reclaimed**
- **New or expanded facility construction is not permitted**
- **Forest and range management activities will be consistent with existing legislation and regulations for riparian management**

Objective 9.1.4

Within the Riparian Reserve Zone for rivers, streams, lakes and wetlands in the plan area (Map B.9.1.1):
- **New road construction except for access to required river and stream crossings and temporary trails required for forest health or riparian habitat and stream enhancement is not permitted**
- **River and stream crossings will be kept to the minimum required for resource development and extraction**
- **Roads no longer needed will be fully reclaimed**
- **New or expanded facility construction is not permitted**

- **Forest and range management activities will be consistent with existing legislation and regulations for riparian management**

Objective 9.1.5

Within the backcountry river corridors in the plan area (Map E.9.1.1 by landscape unit) until replaced by enhanced riparian zone mapping:

- **Existing roads and river crossings locations will be maintained**
- **New road construction except for temporary skid trails or access trails necessary for approved resource development and extraction are not permitted**
- **New river crossings are not permitted**
- **Roads no longer needed will be fully reclaimed**
- **New or expanded facility construction is not permitted**

Best management practices:
Riparian Management Area Guidebook December (MOF, 1995)

Economic benefits and opportunities:

- Resident and guided fishing
- Healthy ecosystems and communities
- Resident hunting and viewing
- Big game guide-outfitting business

Measures of success:

- The viability of riparian ecosystems is maintained
- Compliance and respect for access management plans generated through public and government processes is maintained
- Functional and diversified wildlife species and populations exist within riparian zones
- Reduced riparian land use conflicts and an increased degree of certainty for environmental, social, industrial and commercial interests
- Proper functioning condition of riparian habitat is sustained

Maps:
B.9.1.1 Riparian zones
E.9.1.1 Riparian zones by Landscape Unit

B.9.2 Old Growth and Mature Seral Management

Old growth and mature seral forests are important to maintaining biodiversity values.

Issues:

- Old growth and mature seral forests in the plan area are in limited supply
- There is a need for recruitment of younger stands to meet old growth and mature seral targets
- All site series may not be adequately represented in old and mature forests

Intent:

- Maintain representative old growth forest and mature seral forest

- Encourage livestock to use areas other than OGMAs and MSMAs (see objective 5.0.4)

Resource objectives:

Objective 9.2.1

Manage the plan area for biodiversity emphasis as follows:

LU	BEC	Biodiversity Emphasis		LU	BEC	Biodiversity Emphasis
C14	ESSF	High		C24	ICH	High
C14	MS	High		C24	IDF	High
C15	ICH	High		C24	ESSF	High
C15	IDF	High		C24	MS	High
C15	MS	High		C25	ICH	Intermediate
C15	ESSF	Intermediate		C25	IDF	Intermediate
C16	ESSF	Intermediate		C25	ESSF	Intermediate
C16	MS	Intermediate		C25	MS	Intermediate
C17	ESSF	Intermediate		C26	ICH	Intermediate
C17	MS	Intermediate		C26	IDF	Intermediate
C18	ESSF	Intermediate		C26	ESSF	Intermediate
C18	MS	Intermediate		C26	MS	Intermediate
C23	ESSF	High		C27	ESSF	Intermediate
C23	MS	Intermediate		C27	MS	Intermediate

Objective 9.2.2

Manage within the plan area for mature forest seral targets as follows:

LU	BEC	Mature Age Definition		LU	BEC	Mature Age Definition
C14	ESSFdk	120 years		C15	MSdk	100 years
C14	MSdk	100 years		C18	MSdk	100 years
C15	ICHmk1	100 years		C23	ESSFdk	120 years

Objective 9.2.3

Old Growth Management Areas (OGMAs) and Mature Seral Management Areas (MSMAs) are established within the plan area as per Map B.9.2.1.

Objective 9.2.4

Facility development in the plan area within OGMAs or MSMAs, with the exception of permitted activities for mineral or coal exploration and development or for oil and gas exploration and production, is not permitted.

Objective 9.2.5

Road construction in the plan area is permitted through OGMAs only where necessary for resource development and only where there is not an economically and environmentally reasonable alternative access route as determined by a registered professional biologist and a registered professional engineer.

Objective 9.2.6

Timber harvesting in the plan area may be permitted in OGMAs, for example selective removal of lodgepole pine, where it can be shown to contribute to the maintenance or development of old growth forest characteristics as determined and documented by a registered professional forester.

Objective 9.2.7

Timber harvesting in the plan area is permitted in MSMAs, for example selective removal of lodgepole pine, only where it can be shown that such harvesting will contribute to the maintenance of mature seral forest attributes as determined and documented by a registered professional forester. Such harvesting shall not exceed 30% of the basal area of any given stand.

Objective 9.2.8

Timber harvesting in the plan area is permitted in OGMAs and MSMAs where such harvesting is necessary for approved mineral or coal exploration and development or for approved oil and gas exploration and production. Where such harvesting negates the value of an OGMA or MSMA for meeting old growth or mature seral biodiversity objectives, then, based on old growth and mature attributes, as determined by a registered professional forester, a suitable replacement OGMA or MSMA will need to be identified and established.

Objective 9.2.9

Within the plan area, when an OGMA is damaged or destroyed by natural events (for example, fire, flood, insect infestation), the OGMA will be evaluated for its ability to continue to meet biodiversity objectives. If it is determined to still be suitable for meeting old growth biodiversity objectives, then it shall remain an OGMA. If it is no longer considered suitable for meeting biodiversity objectives, then, based on old growth attributes as determined by a registered professional forester, a suitable replacement OGMA will be established to replace the lost OGMA.

Economic benefits and opportunities:

- Provides land-use certainty for operators and investors
- Helps avert the need for protection-oriented, broadly-applied land-use designations which deter investment
- Helps in meeting sustainability principles and avoiding high-profile boycotts of forest products
- Helps provide continuing employment in the forest sector
- Helps sustain fish and wildlife-based industries
- Supports tourism opportunities

Measures of success:

- A healthy forestry sector contributing to a diversified economy in the SRMMP area and surrounding areas
- Healthy ecosystems contributing to sustainable fish and wildlife populations
- No boycotts of forest products from this area

Maps:

B.9.2.1 Old Growth Management Areas and Mature Seral Management Areas
E.9.2.1 Old Growth Management Areas and Mature Seral Management Areas by Landscape Unit

B.9.3 Wildlife Tree Retention (WTR)

The importance of stand level biodiversity values has been recognized.

Intent:
Maintain stand level biodiversity values to maintain species habitats and biodiversity.

Resource objectives:

Objective 9.3.1

Wildlife tree retention will be maintained, by landscape unit (LU) and biogeoclimatic subzone (BEC), as per Table 9.3.1 below. The WTR target shall be met through either area in wildlife tree patches or basal area retained within the area under prescription.

Table 9.3.1 Wildlife tree retention targets by LU and BEC

LU	BEC	BEO	WTR Target (%)		LU	BEC	BEO	WTR Target (%)
C14	ESSF	H	0.2%		C24	ICH	H	0.4%
C14	MS	H	3.9%		C24	IDF	H	0.7%
C15	ICH	H	3.5%		C24	ESSF	H	0.5%
C15	IDF	H	4.3%		C24	MS	H	0.5%
C15	MS	H	2.9%		C25	ICH	I	4.9%
C15	ESSF	I	5.8%		C25	IDF	I	1.3%
C16	ESSF	I	7.7%		C25	ESSF	I	1.5%
C16	MS	I	7.7%		C25	MS	I	0.8%
C17	ESSF	I	1.6%		C26	ICH	I	1.5%
C17	MS	I	4.9%		C26	IDF	I	1.9%
C18	ESSF	I	2.8%		C26	ESSF	I	3.1%
C18	MS	I	7.0%		C26	MS	I	3.6%
C23	ESSF	H	0.8%		C27	ESSF	I	3.8%
C23	MS	I	6.4%		C27	MS	I	4.3%

Best management practices:
Retain deciduous trees, individual large diameter old trees or clumps of immature forest habitat where species and structural diversity exist within the operable forest

Economic benefits and opportunities:
- Helps in meeting sustainability principles and avoiding high-profile boycotts of forest products
- Helps sustain wildlife-based industry

Measures of success:
- A healthy forestry sector contributing to a diversified economy in the SRMMP area and surrounding areas
- Healthy ecosystems contributing to sustainable wildlife populations
- No boycotts of forest products from this area

Maps:
B.9.3.1 Biogeoclimatic Subzones (BEC)
E.9.3.1 Biogeoclimatic Subzones (BEC)

B.9.4 Wide-ranging Carnivores

The SRMMP area supports populations of eight species of large carnivores, namely black bear, grizzly bear, bobcat, lynx, cougar, coyote, wolf and wolverine. Fisher, martin, greater and least weasel and badger are also found in the area. Grizzly bear, the species with the highest international profile, exist in significantly higher numbers in the Flathead and Upper Elk River watersheds than in other areas in the interior of British Columbia (Appendix 24.0).

Issues:
- Habitat effectiveness benchmarks and suitability inventory are needed
- Proper functioning condition benchmarks are needed
- More and accurate carnivore population and carrying-capacity inventories are needed
- Riparian ecosystems are integral to the health of wide-ranging carnivore populations
- Maintaining interconnected viable ecosystems, including adjacent World Heritage sites, and migratory wildlife species and populations has international implications
- Loss of habitat and species requirements, including remote landscapes, impacts sustainability of wide-ranging carnivore populations
- An industrial access management plan is needed
- Highway 3 acts as a barrier to grizzly bear movement resulting in isolation of populations and adverse impacts to genetic exchange
- Population management strategies and regulations may compromise the intent of the habitat-based objectives for wide-ranging carnivores (Appendix 24.0)
- Maintenance of wide-ranging carnivores is essential to the trapping industry, and is also important to the guide-outfitting industry

Intent:
- Increase habitat effectiveness and the opportunity for genetic dispersal, seasonal and daily movement, foraging and reproduction of wide-ranging carnivores at the landscape and stand level
- Maintain sustainable habitat for, and populations of, wide-ranging carnivores
- Manage public and commercial recreational access as per the Recreation Management Strategy (see Section B.7.1) in order to reduce impacts on wide-ranging carnivores
- Avoid displacement of wolves during the denning period

- Develop and implement future strategies required to manage industrial access in order to maintain connectivity, minimize activity during seasonal periods when wildlife sensitivity levels are highest, and address road density and use issues
- Maintain healthy riparian ecosystems (see Section B.9.1)
- Maintain old-growth and mature seral forest habitat (see Section B.9.2)
- Maintain habitat effectiveness of aquatic and terrestrial ecosystems by maintaining habitat connectivity (see Section B.9.9) and, in particular, core grizzly bear security areas (Map B.9.4.1)
- Maintain movement opportunities for wide-ranging carnivores between the plan area and adjacent watersheds, Montana and Alberta.
- Enhance forage productivity and suitability of grizzly bear habitat.
- Resource development activities will be carried out in a manner that respects the habitat of wide-ranging carnivores, particularly species at risk.
- Maintain remote wild-land areas to support wide-ranging carnivores
- Population management strategies and regulations should complement habitat objectives
- Maintain a balanced predator-prey relationship
- Minimize encounters between wolverines/bears and humans
- Maintain coarse woody debris in known wide-ranging carnivore habitat

Resource objectives:

Objective 9.4.1

Within core grizzly bear security areas in the plan area (see Map B.9.4.1), the expansion of, or new, formal recreation or tourism-related structures:

- **are not permitted in landscape units C14 and C18**
- **are permitted in the remainder of the plan area where there is signed documentation by a registered professional biologist that the proposal does not adversely affect grizzly bear security.**

Replacement or upgrading of existing recreation or tourism-related facilities are permitted.

Best management practices:

Interim Wildlife Guidelines for Commercial Back-country Recreation in British Columbia (MWLAP, 2002)

Identified Wildlife Management Strategy (MOF, Volume 1, Feb. 1999)

Guidelines for managing wide-ranging carnivores (see Appendix 5.0)

Economic benefits and opportunities:

- Wildlife viewing
- Commercial photography
- Big game hunting
- Trapping
- Functional ecosystems
- National and international cooperation and financing

Measures of success:

- Functional and representative populations of carnivores continue to populate the plan area.
- Habitats necessary to accommodate the life requisites of resident and migratory carnivores are maintained.

Maps:
B.9.4.1 Core grizzly bear security areas

B.9.5 Ungulates

Six species of ungulates are indigenous to the plan area. These are elk, mountain goat, moose, mule deer, white-tailed deer and Rocky Mountain bighorn sheep. Of these, mountain goat are regionally significant and Rocky Mountain bighorn sheep are provincially significant (see Appendix 24.0).

In the Flathead River watershed many of these species migrate to seasonally important habitats in Alberta and Montana.

Issues:
- Reduced habitat effectiveness, habitat loss including alienation, and declining habitat suitability, are related to:
    - Forest encroachment
    - Urban expansion
    - Rural recreational development and housing
    - Industrial developments
    - Access development and use
    - Catastrophic climatic events
    - Noxious and invasive weeds
- Populations are declining as a result of:
    - Disease
    - Over-harvesting and predation of ungulates
    - Habituation and unnatural behavioral responses
    - Harassment and displacement from highly suitable habitats
    - Road and railroad-related mortality
- There is a potential for disease transmission from domestic livestock to ungulate species
- Private land ungulate habitats are not covered by the plan

Intent:
- Maintain and enhance ungulate species populations and habitats
- Increase habitat effectiveness and the opportunity for genetic dispersal, seasonal and daily movement, foraging and reproduction of ungulates (Appendix 24.0) at the landscape and stand level
- In future, develop and implement strategies to manage industrial access in order to maintain connectivity, minimize activity during seasonal periods when wildlife sensitivity levels are highest, and address road density and use issues
- Manage public and commercial recreational access as per the Recreation Management Strategy (see Section B.7.1) in order to reduce impacts on ungulates
- Maintain healthy riparian ecosystems (see Section B.9.1)
- Maintain old-growth and mature seral forest habitat (see Section B.9.2)
- Manage ungulate winter range as per Section B.9.7
- Maintain habitat connectivity (see Section B.9.9)
- Maintain and promote recreational opportunities to harvest ungulates (see Section B.7.2)

- Enhance opportunities to appreciate, view and study ungulates in their respective habitats (see Section B.8.2).
- Maintain and facilitate the commercial use of wildlife (see Sections B.8.2 and B.8.3). Maintain the management strategies that perpetuate ungulate species representation, abundance and distribution across the landscape.
- Eliminate potential for parasite and disease transfer from domestic livestock to wildlife.

Best management practices:
Interim Wildlife Guidelines for Commercial Back-country Recreation in British Columbia (MWLAP, 2002)
East Kootenay Ungulate Winter Range Capability Mapping, Management Objectives and Best Management Practices (Appendix 8.0)
Identified Wildlife Management Strategy (MOF, Vol.1, Feb. 1999)

Economic benefits and opportunities:
- Resident hunting and big game guiding
- Wildlife viewing and photography
- Healthy and balanced ecosystems

Measures of success:
- Healthy and self-sustaining populations of ungulate species.
- Representative, available and suitable ungulate habitat

B.9.6 Ungulate Winter Range

Suitability, capability (Appendix 8.0) and availability of winter range habitat are the principle limiting factors regulating ungulate carrying capacity and, accordingly, are significant with respect to ungulate species and population management.

The spatial identification of ungulate winter range capability zones by species by biogeoclimatic subzone (BEC) and variant has been completed.

Ungulate species that winter within the plan area include elk, mule deer, white-tailed deer, mountain goat, moose and Rocky Mountain bighorn sheep.

Issues:
- Forage availability and suitability for wintering ungulates may be limited by:
    - Adequate forage carry-over
    - Domestic livestock and wild ungulate competition for available forage
    - Forest in-growth
    - Noxious and invasive weeds
    - Exclusion of fire from winter ranges
    - Land alienation
- Ability of ungulates to use winter range, may be limited by:
    - Barriers (fences, reservoirs, roads)
    - Disturbance related to commercial and public motorized recreation activity on winter ranges
    - Industrial resource development and access use during seasonal periods when ungulate energy levels are lowest

- Research and inventory related to the determination of wintering populations, distribution and habitat selection is incomplete
- Suitable cover may be unavailable
- There is a need to balance cover and forage requirements
- Private land that is ungulate winter range is not covered by the plan

Intent:

- Maintain ungulate winter forage and cover in a condition that meets the life requisites of wintering ungulates
- Maintain ungulates across their natural range
- Enhance habitat effectiveness by: minimizing barriers to movement; implementing access management; and, managing habitat deployment
- Enhance suitability and forage productivity of ungulate winter range
- Employ current biological and ecological science for the development and perpetuation of ungulate winter habitat structure, suitability and functional management requirements
- Manage ungulate winter range on an ecological basis as opposed to a species-driven process.
- Stand level prescriptions consistent with natural landscape characteristics
- Manage public and commercial recreational access as per the Recreation Management Strategy (see Section B.7.1) in order to maintain ungulate winter range habitat effectiveness
- In future, develop and implement strategies to manage industrial access in order to maintain ungulate winter range habitat effectiveness, minimize activity during the winter when ungulate sensitivity levels are highest, and address road density and use issues
- Maintain old growth and mature seral targets as per Section B.9.2.

Resource objectives:

Objective 9.6.1

Ungulate winter range in the plan area is established as defined on Map B.9.6.1. The landscape-level cover and forage targets will be applied by Landscape Unit by habitat type (see Map 9.6.2) as expressed in Table 9.6.1 and 9.6.2

Objective 9.6.2

Within ungulate winter range as defined on Map B.9.6.1, the stand/site-level management objectives and stocking standard targets will be applied by habitat type as expressed in Table 9.6.3 and Map 9.6.2.

Table 9.6.1. Definitions of Habitat Types Used for East Kootenay Ungulate Winter Range Management Objectives and Best Management Practices
Minimum required management unit size is 2 hectares

Habitat Type	Definition	Field Verified Ecosystem Units
Open Range	Lands ecologically suited to production of bunchgrasses and dryland shrub species. Snow accumulations are typically low. (includes existing open range, meadows, cultivated and similar cover classes)	**PPdh2,** 02a, 02b, 01 **IDFdm2, un**, 02,03; **IDFdm2a, un2**, 02; **MSdk**, 02 **ICHdm**, 02; **ICHwk1**, 02; **ICHvk1**, 02 (& Rock talus sites)
Open Forest	Lands ecologically suited for production of large crowned open forest with bunchgrasses and dryland shrub species. Snow accumulations are typically light. (typically <40% crown closure, multi-storied stand structure, and low stocking levels)	**PPdh2**, 03, 04 **IDFdm2, un**, 01 warm, & neutral <1000m. **IDFdm2a, un2,** 03 Fd leading[1] **MSdk,** 03 Fd leading; **ICHdw**, 02; **ICHdm**, 03 Fd leading **ICHmk1**, 02; **ESSFdk**, 02; **ICHmw1**, 02
Managed Forest (Dry)	Lands ecologically suited for Fd and Py dominated forest. These provide forage values for 1-3 decades during the forest regeneration phase.	**IDFdm2, un**, 01 cool, and neutral >1000m 04, 05
Managed Forest (Transitional)	Lands ecologically suited for Douglas-fir climax stands often having a heavy lodgepole pine and larch component. These provide forage for 1-3 decades during the forest regeneration phase. Snowpack is typically light to moderate.	**IDFdm2a, un2**, 03 Non-Fd leading. 04, 01, 05
Managed Forest (Mesic)	Lands ecologically suited to pine leading stands which provide forage values for 1-3 decades during the forest regeneration phase. Moderate snow accumulations necessitate the retention of cover.	**MSdk**, 03 Non-Fd leading. 04, 01, 05 where elk, deer capability mapped.
Managed Forest (Moist)	Moist ecosystems providing forage values for 1-3 decades during the forest regeneration phase. Moderate snow necessitates retention of cover.	**MSdk**, 03 Non-Fd leading. 04, 01, 05 where moose capability only mapped. **ICHdw**, 01a, 01b, 03, 04; **ICHdm**, 03 non-Fd leading, 01, 04, 05
Managed Forest (Wet)	Wetter ecosystems providing forage values for 1-3 decades during the forest regeneration phase. Moderate to deep snow necessitates retention of cover.	All other site series not listed above or below in **ICHmk1, ESSFdm1, ESSFdm2, ESSFdk, ICHmw1, ESSFmm1, ESSFwm, ICHwk1, ICHvk1** **ESSFwc2, ESSFvc**
Riparian, Deciduous and Shrub Lands	Lands ecologically suited as brushfields, non-productive and deciduous forest and shrub communities generally along water features. Often containing patches of Sx, Cw, Hw or Bl.	Approximately characterized by **IDFdm2, un, dm2a, un2**, 06,07 **MSdk**, 06,07; **ICHmk1**, 08; **ESSFdk**, 06,07; **ICHmw1**, 07 **ESSFmm1**, 07; **ICHwk1**, 09; **ESSFvc,** 06 And similar wetland riparian areas in other BECs.
Avalanche Tracks	High to moderate capability avalanche tracks as rated for Grizzly bear habitat. Usually characterized by lush tall shrub and forb vegetation.	Various site series.

---

[1] Fd leading is defined as more than 150 trees per hectare of Douglas-fir over 30cm dbh at time of harvest.

Table 9.6.2. Landscape Level Cover and Forage Objectives for East Kootenay Ungulate Winter Range

Objectives apply within mapped ungulate winter range by landscape unit. When landscape level objectives cannot be met, a recruitment strategy or a local habitat management plan that respects their intent must be prepared for approval by the Regional Manager, Ministry of Water, Land and Air Protection.

Habitat Type	Ungulate Winter Range Management Objective	Primary Ungulate Species	Landscape Level Minimum Requirement[2]	Cover and Forage Definitions	Comments
Open Range	Promote preferred forage production.	Elk, Bighorn sheep Mule deer Whitetailed deer Mountain goat	Cover N/A See comments. Forage N/A See footnote.	Preferred forage is climax grass and dryland shrub communities.	Cover requirements will be met by adjacent open forest stocking standards and managed forest retention areas.
Open Forest	Promote preferred forage production in understory.	Elk, Bighorn sheep Mule deer White-tailed deer Mountain goat	Cover N/A See comments. Forage N/A See footnote.	Preferred forage is climax grass and dryland shrub communities.	Cover requirements will be met through open forest tree retention requirements and adjacent managed forest retention areas.
Managed Forest (Dry)	Maintain a component of early seral vegetation through time.	Elk Bighorn sheep Mule deer White-tailed deer	Cover 10% Forage 10%	Height ≥15m, and Evergreen CC ≥40% ≤30 year-old forest	Applies to mapped dry managed forest. 15m height based on 5m of expanding crown, 5m of wide crown and 5m of dying crown leaving room for movement
Managed Forest (Transitional)	Maintain a component of early seral vegetation through time.	Moose, Elk Mule deer White-tailed deer	Cover 20% Forage 10%	Height ≥ 15m, and Evergreen CC ≥40% ≤30 year-old forest	Applies to mapped transitional managed forest within ungulate winter range.
Managed Forest (Mesic)	Maintain a component of early seral vegetation through time.	Elk Mule deer	Cover 30% Including mature & old 20% Forage 10%	Height ≥ 15m, and Evergreen CC ≥40% ≥100 year-old forest ≤30 year-old forest	Applies to mapped mesic managed forest. Prefer non-Pl leading where available. Partial cut stands with rank 1 layer meeting these specifications can qualify.
Managed Forest (Moist)	Maintain a component of early seral vegetation through time.	Moose	Cover 20% Forage 10%	Height ≥ 15m, and Evergreen CC ≥40% ≤30 year-old forest	Applies to mapped moist managed forest within ungulate winter range.
Managed Forest (Wet)	Maintain a component of early seral vegetation through time.	Moose	Cover 30% Forage 10%	Height ≥ 15m, and Evergreen CC ≥40% ≤30 year-old forest	Applies to mapped wet managed forest within ungulate winter range.
Riparian, Deciduous and Shrub Lands	Maintain high shrub production interspersed with good snow interception cover.	Moose, Elk Mule deer Whitetailed deer	Where ecologically suited, maintain or enhance climax (non-pine) conifer and deciduous forest		Riparian stands meeting cover definition can contribute to managed forest cover objectives.
Avalanche Tracks	Retain cover along high and mod. avalanche zones.	Moose Elk	Retain all forest within track complexes and 50m of forest outside of complexes. Retain 100m of cover adjacent to both sides of isolated tracks. Maximum harvest 20% of basal area on one side of avalanche track.		

---

[2] Ideally manage for forage targets of 100% on Open Range and Open Forest sites, and at least 20% on managed forest sites. Forage maintenance and enhancement on Open Range and Open Forest is a multi-jurisdictional responsibility and is not expected to be achieved by forest licensees alone. Licensees, ranchers, government, restoration committees, and other agencies are encouraged to collaborate to achieve forage objectives through slashing and burning programs.

Table 9.6.3. Stand/Site Level Management Objectives and Stocking Standards for East Kootenay Ungulate Winter Range Management

Habitat Type	Target Stocking Standard (Stems/ha)	Minimum Stocking Standard (Stems/ha)	Maximum Stocking Standard[3] (Stems/ha)	Species Preference for Residual Trees[4]	Free-Growing Window
Open Range	20 5 of the largest 1/3 of the diameter range	0 0	75 20 of the largest 1/3 of the diameter range	Favour Py in PPdh2, and Douglas-fir with a component of deciduous trees where available in other BECs.	0-2 years
Open Forest[5]	150 30 of the largest 1/3 of the diameter range	76 20 of the largest 1/3 of the diameter range	400 50 of the largest 1/3 of the diameter range	Favour Py in PPdh2, and Douglas-fir with a component of deciduous trees and Lw where available in other BECs	1-3 years
Managed Forest (Dry)	600	400	1200	Favour climax trees, including Lw with a component of deciduous trees where available in other BECs.	12-20 years
Managed Forest (Transitional)	Provincial standards	Provincial standards	Provincial standards	Favour deciduous and groups of climax tree species.	12-20 years
Managed Forest (Mesic)					
Managed Forest (Moist)					
Managed Forest (Wet)					
Riparian, Deciduous and Shrub Lands	Normal riparian standards. See Best Management Practices	Normal riparian standards See Best Management Practices	Normal riparian standards See Best Management Practices	Favour large crowned Fd, Sx, Act, Cw, Bl	N/A See Best Management Practices
Avalanche Tracks Reserve Zone	N/A	70% of existing stand basal area	N/A	Prefer Sx, Bl retention.	1-3 years

---

[3] Maximum density policy states that up to 10,000 stems may be allowed before thinning is required. However management should attempt to achieve targets. Co-operation among licensees, government, restoration committees and other agencies is encouraged.

[4] Species preference must consider other wildlife, biodiversity, silviculture and forest health factors balanced with these objectives.

[5] These stand targets are based on growth models which indicate that at least one half of site timber potential will be produced, and forage response data that indicate that preferred grass (eg. bluebunch wheatgrass and rough fescue) and browse species (eg. Saskatoon) can be sustained if stands are managed to these levels.

Best management practices:
East Kootenay Ungulate Winter Range Capability Mapping and Management Guidelines (Appendix 8.0)
Interim Wildlife Guidelines for Commercial Back-country Recreation in British Columbia (MWLAP, 2002)
Forest harvesting, hauling and other industrial mechanized operations within the identified UWR should be scheduled to avoid disturbance during the period when ungulates are most susceptible to stress. This period of vulnerability most commonly extends from mid January to late March.
Stand Site Level Best Management Practices (Appendix 8.0)

Economic benefits and opportunities:

- Commercial wildlife viewing and photography
- Resident wildlife hunting
- Guide-outfitting
- Healthy ecosystems - less management or rehabilitation costs
- Healthy predator-prey relationships

Measures of Success:

- Suitable winter range forage and cover habitat attributes targets are achieved and sustained.
- Forage productivity is enhanced
- The opportunity to access available forage is optimized
- The managed ungulate winter range configuration resembles the characteristics of a landscape evolved through natural disturbance events
- The reduction of unnatural movement, increased predation success and displacement of wildlife from highly suitable winter habitat is evident
- The shelter and forage value of mature and old growth forests within identified ungulate winter ranges is achieved
- The best strategic and operational management practices for winter range conservation are employed
- The growth and productivity of preferred forage species and the spatial and temporal management of forest cover is achieved (through the application of appropriate disturbance events)

Maps:
B.9.6.1 Ungulate Winter Range
B.9.6.2 Ungulate Winter Range Habitat Types [*]
E. 9.6.1 Ungulate Winter Range by Landscape Unit
E.9.6.2 Ungulate Winter Range Habitat Types by Landscape Unit

---

[*] PEM maps depicting: Site Series Stratified by Moisture Regime; Management Objectives by Site Series Distribution by BEC; Winter Range Capability Maps by Species; Optimum Winter Range Capability Maps by TSA

B.9.7 Species at Risk

Species and plant communities listed provincially as rare and endangered (red-listed), vulnerable (blue-listed) or species of regional management concern (yellow-listed) are considered to be species at risk. Many of these listed species are indigenous to the plan area (see Appendix 24.0).

Issues:

- Not all known endangered, threatened or vulnerable plant and wildlife species have been legally acknowledged through the provincial Identified Wildlife Management Process
- Measures and procedures to protect and maintain those habitats and species which are not officially approved, are lacking
- Inventory of identified wildlife species and habitats is incomplete
- There are few wildlife habitat areas (WHA's) in the plan area
- There is a lack of coordination among BC, Alberta, international and federal species- at-risk legislation
- There is a need for more species-at-risk recovery plans, including multi-jurisdictional plans
- The most significant area for species at risk in Alberta is adjacent to the SRMMP
- Accidental mortality resulting from trapping of species at risk may impact population sustainability

Intent:

- Maintain all endangered, threatened or vulnerable species and communities as provincially listed
- Reduce habitat loss, harassment, displacement of endangered, threatened or vulnerable species and communities, as provincially listed, resulting from public and commercial recreation and resource development activities through the application of best management practices (as listed below)
- Manage public and commercial recreational access as per the Recreation Management Strategy (see Section B.7.1), including area-based access management measures under the *Wildlife Act*, to maintain endangered, threatened or vulnerable species and communities, as provincially listed
- Maintain proper functioning condition, including ecological integrity, of habitats
- Maintain endangered, threatened or vulnerable species and communities, as provincially listed, in conjunction with private land conservation measures
- Maintain old growth and mature seral targets as per Section B.9.2
- Maintain ungulate winter range as per Section B.9.6
- Manage riparian habitat as per Section B.9.1

Best management practices:

Interim Wildlife Guidelines for Commercial Backcountry Recreation in British Columbia (MWLAP, 2002)
Identified Wildlife Management Strategy (*MELP and MOF,1999)*

Economic benefits and opportunities:

- Wildlife viewing and photography
- National and international cooperation and financial support
- Healthy and viable ecosystems

Measures of success:

- No extirpation of species
- Stable and balanced ecosystems including species at risk populations
- Biodiversity is maintained through retention and deployment of representative species and habitats across the landscape

B.9.8 Access

Access is one of the most influential factors affecting wildlife and wildlife habitat stewardship. In the East Kootenay, access planning initiatives designed to husband and sustain habitat and wildlife habitat, species and populations have a long history (Appendix 24.0).

The implementation and enforcement of appropriate access management is essential to achieve wildlife management objectives.

Issues:

- Issues of concern related to access, road development and use are habitat alteration, fragmentation and loss, wildlife mortality, harassment and displacement, dispersal barriers and pollution (Appendix 24.0).
- The Recreation Management Strategy (see Section B.7.1) needs to be implemented
- There is a need for an industrial access management plan
- Environmental and social carrying capacity, environmental sensitivity and compatibility analysis, and cumulative impact assessments within the plan area are needed
- Unregulated, repetitive or cumulative access related disturbances result in:
    - adverse impacts on sensitive wildlife and wildlife habitats
    - reduced vigour, reproduction capability and ultimately reduced wildlife populations (Appendix 24.0)
    - alterations of normal behavioral functions resulting in abandonment of quality habitat
    - interruption of foraging and breeding activities and intrusion on seasonal and daily movement opportunities
- There are potential impacts resulting from international and interprovincial motorized access

Intent:

- Manage public and commercial recreational access as per the Recreation Management Strategy (see Section B.7.1) in order to reduce impacts on wide-ranging carnivores
- Develop and implement future strategies required to manage industrial access in order to maintain habitat effectiveness and connectivity, minimize activity during seasonal periods when wildlife sensitivity levels are highest, and address road density and use issues

- In implementing recreational and future industrial access strategies, recognize the value of retaining ecological integrity, environmental stewardship principles, and conservation goals (Appendix 24.0) that reduce the risk of:
    - habitat loss, fragmentation, damage or alienation
    - sedimentation and erosion
    - wildlife harassment and displacement and the subsequent potential for decreased habitat effectiveness
    - increased pressure on fish and wildlife resources and associated loss of populations and recruitment potential
    - noxious weed dispersal
    - exacerbating the loss of wild-land or remote habitat environments
    - increased vulnerability (from a hunting perspective there is a direct correlation between harvesting success and uncontrolled road uses and road density)
    - reducing the natural distribution, movement, foraging and reproduction opportunities of wildlife species and populations
    - unnatural behavioral response to threats

Economic benefits and opportunities:

- Maintains the integrity of the environmental resource base
- Increases certainty for wildlife-based industries
- Increases certainty for public recreation
- Increases certainty for commercial recreation operations

Measures of success:

- Successful implementation of access management plans generated through public and government processes
- Maintenance of effective wildlife habitats
- Maintenance of functional and diversified wildlife species and populations
- Reduced land use conflicts and an increased degree of certainty for environmental, social, industrial and commercial interests
- Retention of remote wild-land characteristics

B.9.9 Connectivity

The plan area has an abundance and diversity of wildlife features. This phenomenon is attributed to the areas inherent complexity of ecological systems and connectivity with both the Great Plains in Alberta and the intermountain region of the United States. The establishment and maintenance of terrestrial and aquatic connectivity is important with respect to maintaining an opportunity for wildlife to move within and among a variety of habitats, which are required to support the life requisites of indigenous and migratory fish and wildlife species.

Discrete habitats and core wildlife areas which support the connectivity concept have been identified as old growth management areas (OGMA), riparian, mature seral forest, avalanche tracks, ungulate winter range, core grizzly bear security areas, natural movement corridors (low passes), inoperable forested Crown Forest Land Base (CFLB), inoperable non-forested CFLB and operable forest habitat. A full description of the elements of connectivity is found in Appendix 7.0.

Issues:

- The SRMMP area is one of the very few large contiguous habitat linkages in the southern part of the Province that retains a functional capacity to facilitate unrestricted daily and seasonal migratory movement opportunities
- Access management is essential to the maintenance of connectivity
- Barriers (e.g. Highway 3) adversely affect genetic dispersal, seasonal and daily movement, foraging and reproduction of wildlife species
- Private land, and the activities on private land, influence connectivity effectiveness. Appropriate private land conservation measures include conservation easements, land purchases, habitat enhancement and access management are needed.
- There is incomplete data on:
    - wildlife populations, distribution and habitat selection
    - distribution of rare ecosystems
    - habitat of species at risk
    - traditional migration and movement routes
    - carrying capacity
    - habitat effectiveness
    - proper functioning condition benchmarks
- Achieving the connectivity concept is contingent upon maintaining ecological integrity and implementing effective access management.
- Effective maintenance of connectivity is dependent on appropriate management of adjacent lands and water.
- Winter ranges in the Pickering Hills, Sheep Mountain and Wigwam Flats are an essential component of the connectivity matrix.

Intent:

- Maintain connectivity in an ecosystem-based forest matrix
- Perpetuate abundant, diverse and self-sustaining populations of fish and wildlife species
- Increase habitat effectiveness and the opportunity for genetic dispersal, seasonal and daily movement, foraging and reproduction of wildlife species (Appendix 24.0) at the landscape and stand level
- Manage public and commercial recreational access as per the Recreation Management Strategy (see Section B.7.1), including area-based access management measures under the *Wildlife Act*, to maintain connectivity
- Develop and implement future strategies required to manage industrial access in order to maintain connectivity, minimize activity during seasonal periods when wildlife sensitivity levels are highest, and address road density and use issues
- Maintain proper functioning condition, including ecological integrity, of habitats
- Maintain connectivity in conjunction with private land conservation measures
- Maintain old growth and mature seral targets as per Section B.9.2
- Maintain ungulate winter range as per Section B.9.6
- Manage riparian habitat as per Section B.9.1

- Retain deciduous trees, individual large diameter old trees or clumps of immature forest habitat where species and structural diversity exist within the operable forest (as per Section B.9.3)
- In drainages where forest development activities must occur during periods of intensive wildlife use, timber harvesting strategies should be designed to alternate activity locations to ensure that grizzly bear can utilize drainages where undisturbed foraging and breeding opportunities can occur

Resource objectives:

Objective 9.9.1

Within the plan area retain forest cover within and adjacent to avalanche track complexes as per Map B.9.9.1

Objective 9.9.2

Retain a 50 metre minimum width of forest cover adjacent to the perimeter of avalanche track complexes in the plan area90, and 100 metres minimum adjacent to the perimeter of isolated tracks (see Map B.9.9.1).

Objective 9.9.3

Retain the small isolated patches of forest cover within avalanche track complexes in the plan area (see Map B.9.9.1).

Objective 9.9.4

Road construction is permitted through avalanche tracks in the plan area (see Map B.9.9.1) only where necessary for resource development and only where there is not an economically and environmentally reasonable alternative access route as determined by a registered professional biologist and a registered professional engineer. Where road crossings are necessary, avoid the highly productive areas. Road access through avalanche tracks should be closed when operations are completed.

Objective 9.9.5

Schedule resource development activity in close proximity to avalanche tracks in the plan area (see Map B.9.9.1) to avoid disturbance during May and late June when the most concentrated and intensive use of avalanche habitat by wildlife occurs.

Objective 9.9.6

Within the inoperable connectivity (inoperable forest, CFLB and inoperable non-CFLB) and ungulate winter range as per Map B.9.9.1, the expansion of, or new, permanent recreation or tourism-related facilities in the plan area:

- **are not permitted in landscape units C14, C16, C18 and C23.**
- **are permitted in the remainder of the plan area where there is signed documentation by a registered professional biologist that the proposal does not adversely affect the objectives and intent of connectivity.**

Replacement and/or upgrading of existing recreation or tourism-related facilities are permitted.

Upon completion of any development in the inoperable connectivity, the landscape will be returned to as natural a condition as possible.

Economic benefits and opportunities:

- Helps avert the need for protection-oriented, broadly-applied land-use designations which deter investment
- Helps in meeting sustainability principles and avoiding high-profile boycotts
- Helps sustain fish and wildlife-based industries
- Supports tourism opportunities
- Supports environmentally-sustainable communities

Measures of success:

- Genetic dispersal, seasonal and daily movement, foraging and reproduction opportunities for wildlife species are maintained (see Appendix 7.0)
- Abundant, diverse and self-sustaining populations of fish and wildlife species
- Habitat diversity and availability is maintained and is effectively utilized
- Habitats are effectively interconnected and functional
- Impediments to wildlife movement and identified barriers are resolved
- Dispersal of wildlife is accommodated and natural behavioral patterns remain uninhibited
- Indigenous wildlife species are not extirpated

Maps:

B.9.9.1 Connectivity
E.9.9.1 Connectivity by Landscape Unit

B.9.10 Fish

Resident and migratory fish species within the planning area include: bull trout, west-slope cutthroat trout, mountain whitefish, mottled sculpin, slimy sculpin, large-scale sucker, rainbow trout, brown trout and brook trout. The Flathead, Elk and Wigwam systems provide important spawning and rearing habitats for these species.

Bull trout, the largest indigenous fish in the area, is a blue-listed species in British Columbia and is listed as endangered in the neighbouring American jurisdictions.

Issues:

- Aquatic and riparian habitat loss and degradation impacts sustainability of fish populations
- Water quality, quantity and timing of flow are impacted by human activities on land and water
- Fish displacement, injury and stress result from intensive angling pressure
- Post-hooking mortality is associated with intensive catch and release angling pressure
- Effective angling guide management is lacking (see Section B.8.4)
- There is a lack of success with international bull trout recovery in the Flathead watershed
- Increasing angler days and intensity from resident, non-resident and guided anglers may be affecting sustainability of fish populations
- West-slope cutthroat are hybridizing with rainbow trout

Intent:

- Maintain diverse, healthy and self-sustaining fish populations
- Maintain proper functioning condition of aquatic and riparian ecosystems
- Maintain a quality recreation fishing experience for resident and guided anglers
- Maintain suitable water quality, quantity and timing of flow to sustain fish populations

Economic benefits and opportunities:

- Recreational angling opportunity
- Angling equipment suppliers
- International cooperation and financial support
- Angling guide businesses
- Increased tourism

Measures of success:

- Fish population levels and habitat availability sustained
- Decreased fish mortality resulting from human activities
- Viable angling guide businesses

B.9.11 Grassland Communities

Grassland communities within the plan area include: Montane spruce (MSdk) and fire-induced and maintained Interior Douglas Fir (IDF); riparian; avalanche track; alpine (AT); and parkland (ESSFdkp and ESSFwmp) grassland habitats. These communities are important to ecosystem biodiversity and a variety of birds, small mammals, wide ranging carnivores and wild ungulates within the plan area (Appendix 24.0).

Issues:

- The grassland community inventory is incomplete.
- Forest ingrowth and encroachment results in reduced area and suitability of grassland communities in the low elevation IDF and MSdk subzones
- Fires have been suppressed and excluded
- Overgrazing has occurred
- Grassland communities have been fragmented and lost
- There is a need for data and assessment benchmarks for grassland community habitat effectiveness and proper functioning condition
- Degradation of grassland ecosystems has resulted from off-road vehicular use
- Noxious weeds are spreading rapidly

Intent:

- Maintain proper functioning condition and effective use of grassland communities
- Manage grasslands toward potential natural condition and extent
- Manage public and commercial recreation access as per the Recreation Management Strategy (see Section B.7.1) in order to reduce impacts on grassland ecosystems

Economic benefits and opportunities:

- Healthy and viable grassland ecosystems
- Resident and guided hunting
- Crown land grazing

Measures of success:

- Grassland communities are functional and effectively utilized by wildlife
- Biodiversity is maintained through retention and deployment of functional grassland communities across the landscape
- Wildlife species, including populations, dependent upon grassland communities are stable and balanced

B.9.12 Air Quality

Based on results from other areas with similar climates, topography and emission sources where monitoring has been conducted, air quality in the plan area is expected generally to be good with seasonal and localized fluctuations of air contaminants.

Issues:

- There are varying degrees of air quality in the plan area
- Air quality is influenced by activities both within and outside of the plan area
- There is no air quality management plan for the province
- Thermal air inversions are common in the plan area due to topography and climate
- There is no specific monitoring of air quality in the plan area. However, based on results from other areas with similar climates, topography and emission sources where monitoring has been conducted, air quality may be predicted as follows:

  - Flathead River watershed is expected to be very good with minimal amounts of air contaminants
  - Bull River \Sand Creek watersheds and the Wigwam watershed are expected to be very good with seasonal and localized fluctuations of air contaminants from vehicle emissions, agricultural and range burning, and emissions from the combustion of wood
  - For the Elk River watershed, air quality is expected to be fair with seasonal and localized fluctuations of air contaminants from vehicle emissions, industrial activity, agricultural and range burning, and emissions from the combustion of wood
- Ozone levels, from both human-related and natural causes,may be a concern in this area although there are no data to confirm this

Intent:
- Manage activity in the plan area to maintain or improve air quality, including reduction of particulate matter, within established and provincially acceptable criteria
- Manage ozone levels wherever possible within established and provincially acceptable criteria
- Visibility resulting from air quality will be maintained within acceptable social standards

Best management practices:
Air Quality Management Principles and Objective (Appendix 5.1)

Economic benefits and opportunities:
- Desirable settlement area
- New standard technology to lower emissions

Measures of success:
- Air quality that meets established national and provincial criteria
- Visibility resulting from air quality is not impaired
- Reduction in medical clinic visits for respiratory ailments

B.10.0 WATER

This chapter addresses water use regulated under the *Water Act*, flood protection measures, and management of drinking water sources including groundwater and Community and Domestic Watersheds. Riparian habitat, fish and water-based recreation and tourism are addressed elsewhere in this plan. An inventory of water licenses in the plan area and resource evaluation area is provided in Appendix 9.0.

The Wigwam and Flathead River basins, as well as portions of the Bull River and Elk River basins, are included in the plan area. These are large and significant rivers with high scenic, recreation and tourism values. All of these rivers, with the exception of the Flathead River, flow into the Kootenay River in B.C. The Flathead River flows about 60 km to the border of Montana, where it crosses into the US eventually flowing into the Clark Fork River, part of the extensive headwaters of the Columbia River. The Elk and Flathead Rivers and major tributaries are mostly high gradient and fast-flowing, their hydrographs dominated by spring freshets when discharge generally increases two to three fold over base flows.

In general, water quality in the plan area is very good, with the exception of portions of the Elk River that have been impacted by settlement and mining activities (L. MacDonald, pers.comm. 2003). The water chemistry of these systems is highly influenced by the limestone parent geology of the Rocky Mountains. Water is generally alkaline, and autotrophic (algal) production in these rivers is strongly phosphorus limited.

Most lakes in the plan area are alpine, headwater lakes; the plan area also includes eight lakes larger than 5 hectares in size: Snowshoe, Weber, Hunger, Marl, Beryl, Three Mile, Frozen and Proctor lakes

Issues:

- Water quality, quantity and timing of flow can be impacted by commercial, residential and industrial development
- Human-related channel disruptions and waste inputs are mainly associated with coal mining, logging, municipal development and cattle ranching
- There are domestic watersheds (as defined by KBLUP-IS) and community watersheds (as defined under the Forest Practices Code) within the plan area (Map B.10.1)
- Responsibility for water (including groundwater) resource management is fragmented across a number of agencies and levels of government, and is not well integrated or coordinated
- Cumulative impacts of human-related activities on water resources are currently not well addressed
- Water shortages exist on almost one quarter of the 89 licensed streams (Map App.10.1 found in Appendix 1.0) in the plan area. Most of the streams with recorded water shortages are small creeks and springs that are tributary to the Elk River.
- Water shortages are likely to occur more often as the number of licenses issued is increased. Since streams have historically been allocated to the full low flow, there is potential for no flow to be left for aquatic life in streams during the low flow period where water shortages occur
- The Elk River basin has experienced flooding problems during May, June and July. Mapping of hazard areas and restrictions has reduced risk in the more populated areas. In recent years, most flood damage occurred to utilities located along Coal and Michel creeks
- There are increasing demands for water-related tourism and recreation opportunities throughout the plan area, especially on the Elk River
- Wetlands and marshes are fairly rare and, for that reason, maintenance of water quality and quantity is particularly important for species dependent on these habitats
- The Flathead River is designated as a Wild and Scenic River in the USA
- The flows of the Wigwam and Flathead Rivers in Canada are unregulated whereas there are small run- of-river hydroelectric facilities on the Bull and the Elk Rivers.
- Insufficient data management concerning groundwater resources, and the consequent inability to make properly-informed decisions

Intent:

- Maintain basic aquatic ecosystem functions and processes
- Maintain water quality, quantity and timing of flow at appropriate levels in the plan area
- Maintain water quality according to criteria established by provincial regulatory agencies
- In designated Community Watersheds in the plan area (Map B.10.1), forestry, grazing, subsurface resource exploration, infrastructure, and backcountry tenure activities will be guided by existing legislation, regulations and guidebooks (refer to Best Management Practices) as amended periodically by regulatory agencies.
- Domestic Watershed Guidelines (refer to Best Management Practices Appendix 5.2) will guide forestry, grazing, subsurface resource exploration, infrastructure, and backcountry tenure activities in domestic watersheds in the plan area. Currently defined domestic watersheds are shown on Map B.10.1.
- To minimize risk to lives and property from flooding, activities such as forestry, grazing, subsurface resource exploration, infrastructure, and backcountry tenures which occur in the plan area upstream of alluvial fans (Map B.10.2) will be guided by the assessment procedure described in Best Management Practices (Appendix 5.3).
- A Water Allocation Strategy as described in Appendix 9.0 will guide water licensing decisions in the plan area
- Identify water bodies in the plan area that may be most suitable for new economic opportunities.

Resource objectives:

Objective 10.0.1

To reduce impacts of forest and subsurface resource exploration development on S5 and S6 streams licensed for human consumption in the plan area, apply the following stream side management provisions:

- **The stream side management zone will extend from the edge of the stream channel bank or the outer edge of the active floodplain, to a minimum distance of 30 metres on each side of the stream, or to the top of the inner gorge, whichever is greater;**
- **For activities within the stream side management zone, specific measures to safeguard water quality for human consumption must be described in development plans and permits;**
- **The provisions apply to all S5 and S6 streams upstream of a water intakes licensed for human consumption (see Map B.10.1 for location of water intakes) except where the stream is within the Enhanced Resource Development Zones – Timber (Map B.4.1) or it has been established that a licensed intake is not being utilized for human consumption.**

Objective 10.0.2:

To reduce risk to water supplies within designated community watersheds in the plan area (Map B.10.1), forest development activities must be preceded by:

- **An assessment of watershed sensitivity and existing impacts to water quality and flow from previous development**
- **An assessment of the risks to water quality and flow which are posed by the proposed activity**
- **Where significant risks are identified, measures to mitigate the risks will be established.**

This requirement may be waived by the designated official if it is felt the extent of the proposed disturbance is so minor that there will be no significant impact to water quality and flow.

Best management practices:

Community Watersheds*: Interior Watershed Assessment Procedure Guidebook version 2.1 (MOF, April 1999)*

Domestic Watersheds Best Management Practices (Appendix 5.2)

Risk Assessment Procedure for Proposed Resource Development Activities Above Alluvial and Debris Torrent Fans (Appendix 5.3; Boyer, 2001)

Economic benefits and opportunities:

- Small independent hydroelectric projects
- Industrial and commercial developments
- Agricultural production
- Recreation and tourism developments
- Private and public infrastructure developments
- Water monitoring
- Community development and expansion
- Sustainable fish and wildlife resource
- Cost-effective drinking water systems

Measures of Success:

- Water Allocation Strategy completed and implemented
- Instream flow requirements implemented for conservation of fish habitat and aquatic ecosystems
- Water available for communities, development and licensing opportunities
- Water quality and quantity criteria are met
- Cost-effective delivery of drinking water
- Resource development plans address water quality, quantity and timing of flow
- Standards for surface water flow are met
- Standards for groundwater levels and conditions, when developed, are met
- Flood damage is reduced
- Adequate monitoring of water quality and quantity
- Riparian areas are in proper functioning condition

Maps:

B.10.1	Watersheds
B.10.2	Designated Hazard Areas
App.10.1	Licensed Streams and Points of Diversion

B.11.0 VISUAL LANDSCAPES

The scenic quality of front-country landscapes and specific backcountry locations is important to communities, recreation and tourism. Historically, the area has attracted visitors who enjoy the natural scenic setting of the area. Steady growth has taken place in the number and size of businesses that cater to these visitors. The resultant increase in activity and developments has changed the relative importance of scenic landscapes and tourism.

Issues:

- Tourism, recreation and other economic values can be affected by the scenic quality of the landscape. Resource extraction, facilities and infrastructure development that modify the natural landscape can have major impacts on visual quality both within and outside the plan area
- The increasing economic benefits to Fernie and the appeal of the plan area as a world- class destination are partly predicated on its outstanding aesthetic surroundings. A higher profile as a tourism destination has the potential to improve on investor confidence and increase tourism businesses and employment within the plan area
- Forest operations in the Upper Kishinena and Sage Creek watersheds may result in visual impacts to some views from Waterton-Glacier International Peace Park

Intent:

- Maintain scenic quality of Crown land visible from communities, highways and major lakes to reflect a range of sensitivity and significance to communities and tourism
- Design timber harvesting, forest management and subsurface resource exploration and development to reflect the importance of specific backcountry landscapes to commercial tourism facilities and tenure areas
- Provide for scenic rehabilitation in areas that exhibit visual impacts.
- Employ operational practices and techniques to maintain visual quality
- Implement visual landscape management efficiently and cost-effectively.
- While it is recognized that subsurface exploration and development and utility corridors may result in visual disturbance not conforming to Visual Quality Objectives (VQOs), visual landscape design principles will still be applied
- Forest operations within backcountry viewscapes seen from commercial recreation lodges need to consider visual landscape design principles
- Forest operations within the Upper Kishinena and Sage Creek watersheds should consider visual landscape design principles

Resource objectives:

Objective 11.0.1

Within the plan area, resource development activities will meet visual quality objectives (VQOs) from defined viewpoints as per Map B.11.1. Where a registered professional forester determines that there are demonstrated forest health or forest protection concerns sufficient to warrant a reduction in visual quality objectives, a VQO of retention may be reduced to a VQO of partial retention and a VQO of partial retention may be reduced to a VQO of modification; however, principles of good landscape design must still be employed. Approved subsurface resource exploration and development and approved utility corridors may result in disturbance in excess of the VQO.

Objective 11.0.2

Within the plan area, new resource development within 500 metres of the following rivers will be designed such that modifications may be discernable but not clearly evident: Bull River, Elk River, Wigwam River, and Flathead River (shown as Backcountry River Corridors on Map B.11.2). Approved subsurface resource exploration and development and approved utility corridors may result in visual disturbance in excess of this objective.

Best management practices:

Visual Landscape Design Training Manual (MOF, 1994).

Visual Impact Assessment Guidebook (MOF, 2001)

Visual Impact Assessments are completed for resource developments in backcountry viewscapes seen from commercial recreation lodges and cabins, and there is follow-up consultation with the commercial recreation operator

Economic benefits and opportunities:

- Certainty to the tourism industry
- Tourism initiatives that market the scenic qualities of the plan area

Measures of success:

- Best available information is utilized in resource development and management plans.
- Achievement of basic definition of VQO
- Resource developments show elements of good landscape design
- Increased cooperation between resource development sectors and commercial recreation and tourism operations.
- Increased economic value in the tourism sector

Maps:

B.11.1 Visual Quality Objectives (VQOs) with viewpoints
B.11.2 River-based visual management area
E.11.1 VQOs with viewpoints by Landscape Units

B.12.0 HERITAGE AND PALEONTOLOGICAL RESOURCES

The plan area and resource evaluation area contain heritage resources related to First Nations, as well as early settlement, oil and gas exploration and coal development. First Nations' cultural areas and traditional use have not yet been addressed (see Chapter B.2.0) and are not included in this section.

Significant fossil localities and potential are known to exist within the plan area and resource evaluation area.

Issues:
- Significant heritage and paleontological resources need to be maintained
- There are privacy issues associated with accessing information concerning known sites on Crown land: balancing the need for confidentiality with the requirement to consider known sites in resource development
- Data collection methodology, definitions and management are not consistent
- The knowledge base concerning paleontological and heritage resources is incomplete
- There is increased interest in collecting fossils and cultural artifacts, including commercial tours
- There is potential for loss of fossils and cultural artifacts from the region, including illicit trade
- Potential scientific value of fossils and cultural artifacts is not always well realized

Intent:
- Conserve significant heritage and paleontological resources
- Maintain confidentiality of heritage and paleontological information
- Maintain or enhance economic opportunities based on heritage and paleontological resources subject to conserving the resource base

Best management practices:
Protocol agreements for the management of cultural heritage resources between MSRM and Ministry of Forests and MSRM and the Oil and Gas Commission

Economic benefits and opportunities:
- Research and education
- Heritage and paleontological tours
- Interpretive facilities
- Restoration projects

Measures of success:
- Public and resource users who are knowledgeable about heritage and paleontological resources and the need to treat them with respect
- Effective mitigation measures incorporated into resource development proposals
- Sites designated under the *Heritage Conservation Act*

- Sustainable commercial ventures with a heritage or paleontological theme

B.13.0 COMMUNITIES, SETTLEMENT AND INFRASTRUCTURE

While activities on private and municipal lands are not directed by the SRMMP, they have a direct influence on the plan area and potential success of plan objectives.

The plan area lies entirely within the Regional District of East Kootenay. There are three incorporated communities (Fernie, Sparwood and Elkford, see map B.1.1) and other unincorporated communities in the Elk valley between Elko and Elkford. New settlement pressures are related to expanding tourism and resource economies and are primarily, though not entirely, focused on the Elk valley.

There are currently no communities or full-time residents within the Flathead or Wigwam drainages (LU C14-C18).

Well-established infrastructure, including power lines, communications sites, rail-lines, highways, secondary roads and gas pipelines, exists within the plan area. With the closure of the Flathead US border crossing, there is no longer road access to the US within the plan area.

Issues:

- Elk valley communities are growing in response to resource and recreation/tourism development
- There are potential and cumulative impacts of communities, settlement uses and infrastructure on fish, wildlife, water, visual and other resource values
- There is increasing community dependence on recreation/tourism development, particularly in Fernie, with resultant changes in social values
- Canadians and Americans place high value on the remote character of the Flathead valley

Intent:

- Maintain community stability and opportunities for growth, while sustaining other values
- Suitable Crown land parcels will be available for settlement uses; specifically:
    - allocation of Crown land for settlement uses will primarily be delivered from Crown lands within municipal boundaries, Official Community Plan areas and settlement corridors
    - first consideration for community expansion opportunities will be in areas adjacent to existing communities
- Crown land allocations for settlement purposes will be directed away from significant environmental or resource values, such as connectivity corridors, key wildlife habitats, and high-capability agricultural lands or forest lands and areas of high subsurface values or interests
- New infrastructure in the Flathead, Wigwam and Bull River drainages in the plan area will be limited to areas in close proximity to existing facilities (e.g. twinning of pipelines or power-lines), or to that required to service approved development projects (e.g. mines, petroleum wells, tourism accommodations)

- Keep the BC-Montana border crossing in the Flathead valley closed
- Encourage cooperation among First Nations, local, Provincial and Federal governments with respect to various planning initiatives (for example, the Regional District's regional growth initiative)
- New infrastructure in community and domestic watersheds (see Map B.10.1), in those cases where an Environmental Assessment review process is not required, will be consistent with Chapter B.10.0

Resource objectives:

Objective 13.0.1

Crown land will not be allocated for community or residential development within the Flathead, Wigwam and Bull River drainages (LU C14 - C18, C26 and C27) in the plan area (see Map B.1.1)

Best management practices:
Guidelines for evaluating, avoiding and mitigating impacts of major development projects on wildlife in BC (Harper et al, 2001)
Current MOU's or protocol agreements between LWBC and Provincial Referral agencies

Economic benefits and opportunities:

- Community growth and related business expansion
- Infrastructure enhancements
- Tourism and recreation opportunities associated with the Flathead, Wigwam and Bull River drainages
- Resource development opportunities (e.g. mining, timber harvesting)

Measures of success:

- Community economic growth
- Well-planned, viable and vibrant communities
- Maintenance of conservation values

PART C - PLAN MONITORING AND REVIEW

Monitoring of ongoing activity and management direction is essential to determine the appropriateness of management decisions and the success of implementation methods. Monitoring provides the basis for determining whether the desired conditions for the plan are being achieved. Monitoring will also serve to indicate required amendment to implementation and plan direction.

Plan review is required to amend management direction regarding resource values within each planning area as social values change and as new information becomes available. It is also recognized that adaptive resource management, as a response to uncertainty, may lead to refinements of the plan, based on monitoring results or other factors. The Ministry of Sustainable Resource Management will co-ordinate any required review of, or amendment to, the SRMMP.

C.1.0 Role of Provincial Government Inter-Agency Committee (IAC)

The provincial government's role in plan amendments, monitoring and implementation occurs at both an individual agency level and at an inter-agency level. Inter-agency co-ordination is a critical factor in ensuring successful implementation of strategic land use plans. Although the Ministry of Sustainable Resource Management will coordinate and approve any strategic amendments to the SRMMP, the regional Inter-Agency Committee (IAC) will be a venue for discussion of proposed plan amendments and plan implementation as they relate to other government agencies.

C.2.0 Advisory Committee for SRMMP

A Southern Rocky Mountain Advisory Committee (SRMAC) will be established by the Ministry of Sustainable Resource Management (MSRM). It will have a broad and balanced representation from government agencies, the Ktunaxa Nation, the private sector, and public interests.

The Southern Rocky Mountain Advisory Committee (SRMAC) will be composed of sectors that have either participated in or are familiar with the plan's development, and represent a diverse cross-section of interests. The role of the SRMAC will be twofold:

1. To provide advice to government on plan monitoring, implementation and effectiveness
2. To recommend to MSRM changes in plan direction and content

To achieve these roles, the committee will convene on a regular basis, and will operate as per the Terms of Reference found in Appendix 4.0 of this plan.

C.3.0 Plan Monitoring

Monitoring of the Southern Rocky Mountain Management Plan should help achieve the following objectives:

- To identify if plan implementation is occurring as intended;
- To identify required changes to plan implementation methods based on review of effectiveness of implemented management direction and provide data to enable the review or confirmation of such strategies;
- To ensure correct mapping boundaries and provide clearer interpretation for implementation and plan support; and
- To identify required changes to strategic management direction resulting from changes in social, economic and environmental conditions which may lead to the development of more detailed and appropriate management direction where necessary.

C.3.1 Monitoring Factors, Indicators and Procedures

The role of monitoring will be a function of both government and the SRMAC. Much monitoring will take the form of subjective evaluation of anecdotal information discussed yearly. If resources allow, this process will occur more formally via recording of information gathered either directly or through user input regarding use patterns, public sentiment, and incidents.

An Implementation Monitoring Report, covering progress, implementation issues and/or constraints, will be prepared on a biennial basis. This report will provide an assessment of how well the direction from the Plan is being reflected in operations.

Effectiveness assessment should analyze trends based on a set of indicators to be developed and maintained by the SRMAC (see Appendices 2.0 and 4.0). The results from this monitoring will be used as a primary adaptive management tool, to indicate adjustments in the SRMMP and potentially in other government programs, policies and procedures that may be warranted in order to more effectively realize the stated objectives. An Effectiveness Monitoring Report will be prepared every five to ten years to determine whether the SRMMP is meeting its desired outcomes.

C.4.0 Plan Review and Amendments

Major or minor plan review and amendments may be initiated through scheduled plan revisions or through unscheduled plan revisions as a result of unforeseen events.

A major scheduled review of the plan will occur within five to ten years. However, local or operational planning processes may, through more detailed mapping, research or public involvement, recommend unscheduled minor or major amendments to the SRMMP. The MSRM will be responsible for assessing whether unscheduled amendment proposals should proceed and for determining what action will be taken. Examples of events that may trigger the need to consider, or proceed with, an unscheduled amendment are:

- the conclusion of a major project proposal review (e.g. an Environmental Assessment process decision) which results in a management decision that differs from the management direction expressed in the SRMMP;
- a significant disturbance to a particular area within the region (e.g., fire, insect/disease outbreak);
- the outcome of SRMAC meetings (see Section C.2.0);

- a government decision in the form of a Cabinet directive, or the adoption of new legislation or regulations.

Whether scheduled or unscheduled, proposed plan amendments will be discussed at SRMAC meetings, and then forwarded to the MSRM Regional Director for discussion at the IAC. Following discussions at the IAC, the Regional Director will review the recommended amendments, assess whether it is major or minor in nature (see C.4.1), and make a decision whether to: 1) adopt the amendment proposal; 2) reject the amendment proposal; or 3) if considered a major amendment, forward the amendment proposal on to the Deputy Minister for further consideration and recommendation to the Minister of MSRM.

C.4.1 Major versus Minor Plan Amendments:

Major amendments to the plan include changes that potentially result in a substantive alteration to the balance of plan opportunities. Examples of such alteration may involve:

- amendment to a particular objective or strategy that would significantly change the priority given to the use of resources in the area for which the change is proposed (e.g. change to strategic guidelines that the forest industry must follow when harvesting timber);
- changes to key Recreation Management Strategies in a planning area;
- addressing future issues concerning the balance between commercial and public recreation;
- amendment of the planning area boundary to either take in or delete a substantial amount of land area.

Comment from the general public will be solicited concerning all proposed major strategic amendments to the plan.

Major plan amendments will be approved by the Minister of Sustainable Resource Management or his designate. In doing so, consideration of the social, economic and environmental implications of the proposed amendment is required. All major changes to the plan will be documented and made available to SRMAC representatives and the general public.

Minor amendments to the plan include changes that do not result in a substantive alteration to the balance of plan opportunities. Examples of such changes include:

- change to Recreation Management Strategy designations in areas which are not highly contested;
- revisions of wording;
- minor changes to guidelines affecting industry - such as a minor change to connectivity matrix based upon better scientific information;
- refinement of different types of recreational motorized uses in motorized zones or between different types of recreational non-motorized uses in non-motorized zones;
- changes to the location of motorized road corridors which maintain the original plan intent.

Minor plan amendments will be approved by the Regional Director of MSRM. All minor changes to the plan will be documented and made available to SRMAC representatives and the general public.

PART D - OPERATIONAL IMPLEMENTATION

The plan will be implemented through a combination of regulated (legal), policy, and unregulated (voluntary) methods. Successful implementation of the plan will depend on government funding and staffing levels and on cooperation and development of partnerships with private sector and community groups. Government, private and public sectors need to work together to achieve plan implementation.

Appendix 3.0 contains a preliminary listing of implementation tasks and projects which involve government agencies and may involve private and public sectors.

D.1.0 Agency Implementation Role

Government agencies will need to be consistent with this plan when conducting or approving operational resource management activities or plans. Resource-specific development plans or permits will take guidance from this plan.

Government agencies will need to develop work plans, within their funding and staffing constraints, for delivering specific operational components of this plan.

The work plan(s) should include:

- Identification of priority projects.
- Identification of key supporting actions that are necessary to complete priority projects and to deliver on the strategic direction of the plan. These include actions that require the involvement of two or more ministries and actions that are solely the responsibility of one agency, but are linked to other SRMMP Implementation Strategy projects.

Information from biennial Implementation Monitoring Reports (see section C.3.0) will also assist in formulating annual work plan items for the future.

D.2.0 Private Sector Role

Private sector operations on Crown land need to be consistent with this plan. The private sector will be encouraged to work cooperatively with government agencies and the public in ensuring that the objectives and intent of this plan are met.

Private land owners are encouraged to manage private land operations in a manner that is complementary to the intent and objectives of this plan.

D.3.0 Public Role

Public use of Crown lands will be expected to comply with this plan.

The public will also be encouraged to assist with monitoring the effectiveness of this plan and recommending any changes that might be needed.

PART E – LIST OF MAPS

E.1.1 SRMMP area
E.4.1 ERDZ – Timber overview and by Landscape Unit
E.7.1.1 Recreation access summer overview and by Landscape Unit
E.7.1.2 Recreation access winter overview and by Landscape Unit
E.9.1.1 Riparian zones overview and by Landscape Unit
E.9.2.1 Old Growth Management Areas and Mature Seral Management Areas overview and by Landscape Unit
E.9.3.1 Biogeoclimatic subzones (BEC) overview
E.9.4.1 Core grizzly bear security areas overview
E.9.6.1 Ungulate Winter Range overview and by Landscape Unit
E.9.6.2 Ungulate Winter Range Habitat Types overview and by Landscape Unit
E.9.9.1 Connectivity overview and by Landscape Unit
E.10.1 Watersheds overview
E.10.2 Designated hazard areas overview
E.11.1 Visual Quality Objectives (VQO) with viewpoints overview and by Landscape Unit
E.11.2 River-based visual management areas overview and by Landscape Unit

SUPPORT INFORMATION

DEFINITIONS *(in progress)*

Term	Definition (source/where found)
Community Watersheds	(*Forest Practices Code*)
Crown Range	(*Range Act*)
Domestic Watersheds	(Definition in guidelines)
Endangered species	(*Wildlife Act*)
Enhanced Resource Development Zone for Coal (ERDZ-C)	Coal-bearing lands in the East Kootenay Land Use Plan identified for intensive coal mining.
Enhanced Resource Development Zone for Timber (ERDZ-T)	Forested lands in the Kootenay Boundary Higher Level Plan identified for intensive forestry.
Fur-bearing animal	(*Wildlife Act*)
Guide-outfitter	(*Wildlife Act*)
Habitat	(*Wildlife Act*)
Identified wildlife	(*Forest Practices Code* Operational Regulations)
Landscape Unit	Large areas of land, generally on the order of 50,000 hectares or greater, which are the basic geographical units for integrated resource planning.
Livestock	(*Range Act*)
Mineral	(*Mineral Tenure Act*)
Protected lands	Parks, Ecological Reserves and other lands set aside from timber harvesting and mining activity.
Range development	(*Forest and Range Practices Act*)
Range Land	(*Forest Practices Code*)
Range practice	(*Forest and Range Practices Act*)
Range Stewardship Plans	(*Forest and Range Practices Act*)
Range Use Plans	(*Forest and Range Practices Act*)
Settlement	Use of Crown land for residential, recreational, community, commercial and industrial purposes. (Kootenay-Boundary Land Use Plan – Implementation Strategy, Chapter3, page73)
Settlement corridor	Areas between existing community areas and adjacent to existing transportation routes, where there is already extensive private land or where specific settlement opportunities are known. They are often support areas for adjacent communities. (Kootenay-Boundary Land Use Plan – Implementation Strategy)
Streams	(*Forest Practices Code*)
Subsurface resources	Resources whose presence is normally hidden from direct view, including minerals, aggregate, rock, coal, coalbed methane, oil, natural gas and geothermal energy. Does not include groundwater.
Sustainable Resource Management Plan (SRMP)	A landscape-level strategic land-use plan, generally based on groupings of landscape units.
Threatened species	(*Wildlife Act*)

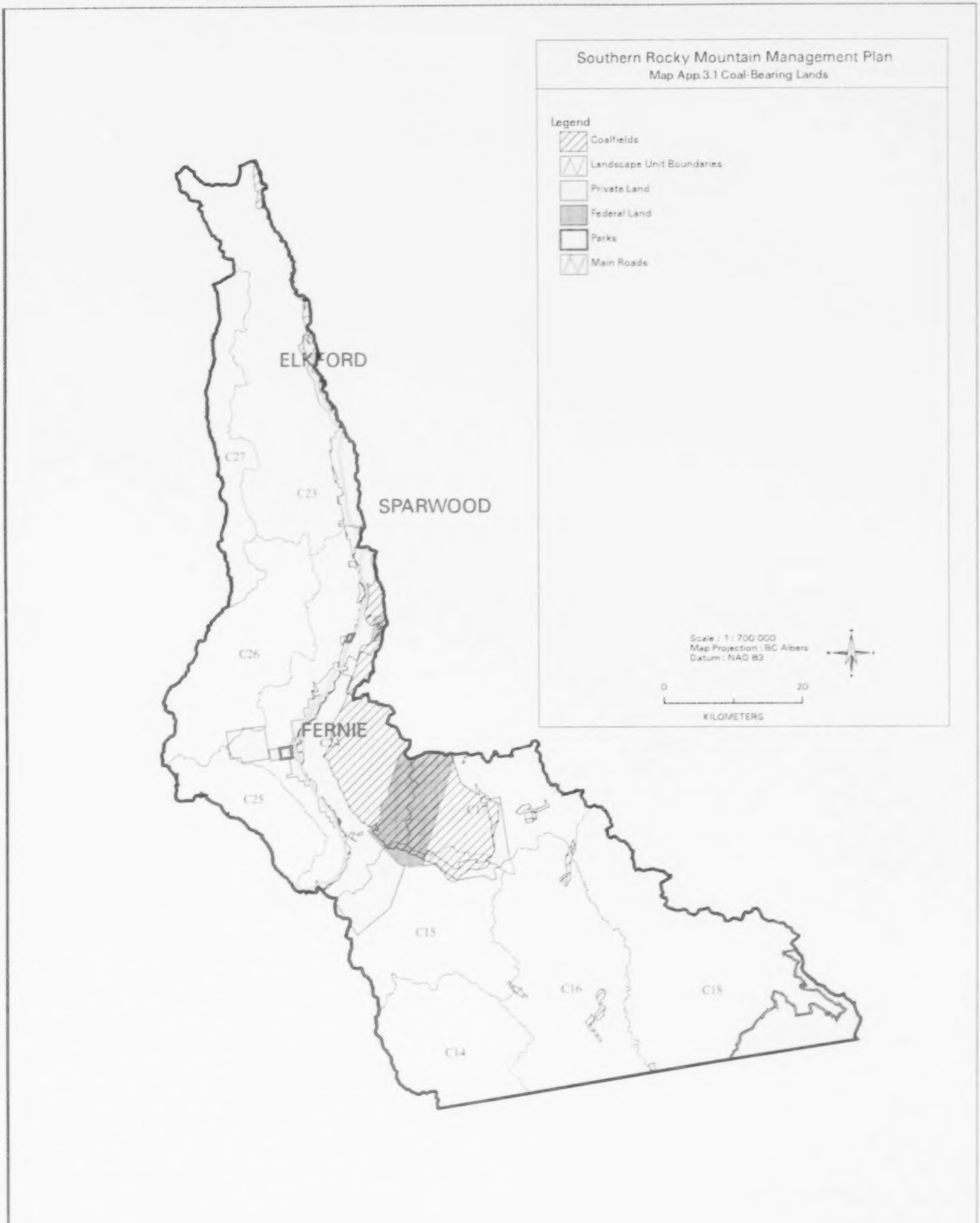
Trapline	(*Wildlife Act*)
Two-zone system	A 2002 amendment to the *Mineral Tenure Act* which in effect produced two zones with respect to mining access rights. The Protected Zone is off limits to mining-related activities, while the Mineral Zone, comprised of all other lands, is open to these activities.
Ungulates	A group of terrestrial mammals that are characterized by the presence of hooves (Shackleton, 1999). There are 9 native species of ungulates in BC: elk, moose, mule deer, whitetail deer, caribou, bison, mountain goat, bighorn sheep, thinhorn sheep.
Ungulate Winter Range	(*Forest Practices Code* Operational Regulations)
Visual Impact Assessment	An assessment that is carried out to demonstrate that resource developments are consistent with the established VQO for a scenic area. A visual impact assessment simulates, in perspective view, the visual effects on the landscape of proposed operations
Visual Quality Objective (VQO)	A resource management objective established to reflect the desired level of visual quality based upon the physical characteristics and social concern for a scenic area
Wildlife	(*Wildlife Act*)
Wildlife habitat	(*Wildlife Act*)

APPENDICES

SOUTHERN ROCKY MOUNTAIN MANAGEMENT PLAN

APPENDIX 1.0 Maps not required to implement plan direction

App.3.1	Coal-Bearing Lands
App.3.2	Mineral Potential



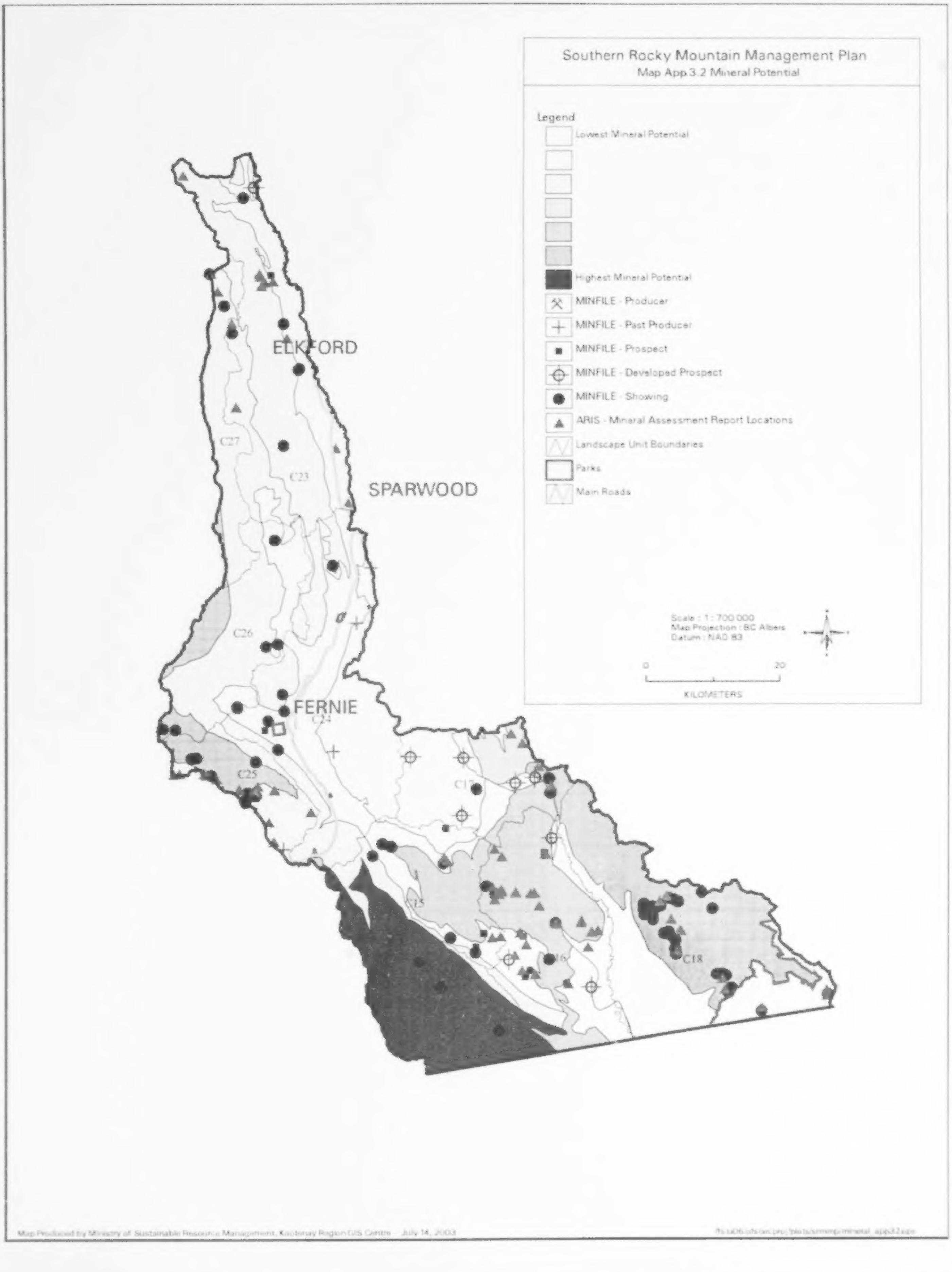
Southern Rocky Mountain Management Plan
Map App.3.1 Coal-Bearing Lands

Legend
Coalfields
Landscape Unit Boundaries
Private Land
Federal Land
Parks
Main Roads
Scale : 1 : 700 000
Map Projection : BC Albers
Datum : NAD 83
0
20
KILOMETERS
ELKFORD
SPARWOOD
FERNIE
C27
C23
C26
C24
C25
C17
C15
C16
C18
C14

Map Produced by Ministry of Sustainable Resource Management, Kootenay Region GIS Centre July 30, 2003

Southern Rocky Mountain Management Plan

Map App.3.2 Mineral Potential


Legend
Lowest Mineral Potential
Highest Mineral Potential
MINFILE - Producer
MINFILE - Past Producer
MINFILE - Prospect
MINFILE - Developed Prospect
MINFILE - Showing
ARIS - Mineral Assessment Report Locations
Landscape Unit Boundaries
Parks
Main Roads
Scale : 1 : 700 000
Map Projection : BC Albers
Datum : NAD 83
0
20
KILOMETERS
ELKFORD
SPARWOOD
FERNIE
C27
C23
C26
C24
C25
C17
C15
C16
C18

Map Produced by Ministry of Sustainable Resource Management, Kootenay Region GIS Centre July 14, 2003

APPENDIX 2.0 Plan Monitoring and Issues Potentially Requiring Plan Amendment

It is expected that the Southern Rocky Mountains Advisory Committee (SRMAC – see Appendix 4.0) will produce and maintain a comprehensive list of monitoring indicators.

Key factors to be monitored may include:

- Effectiveness of the plan in maintaining economic opportunities for resource development opportunities in the plan area.
- Effectiveness of the connectivity matrix and other conservation objectives
- Effectiveness of ungulate habitat guidelines and old growth management areas in providing habitat to ensure viable populations of species dependent on these areas.
- Effectiveness of the water management objectives
- Sustainability of social values in the plan area
- Effectiveness of Recreation Management Strategies in maintaining diversity and quality of recreational experiences.

Outstanding Issues for Consideration for Plan Amendment

Due primarily to resource and time limitations, the SRMMP has not addressed a number of key known issues. MSRM will work with the SRMAC to confirm which of these residual issues will be recommended for further work and incorporation into the SRMMP as plan amendments. This work will occur as priorities and available resources permit. Some of these key residual issues are:

- Industrial access issues – identification of strategic direction required for industrial access (eg. restricting road building to summer and fall in key spring grizzly habitat).
- Requirement for environmental cumulative impact assessment and compatibility analyses.
- Recreational infrastructure development issues.
- Issue regarding recreational carrying capacity and allocation (e.g. on the Elk R. - angling guide pressures, backcountry recreation capacity and allocation of use levels between public and commercial)
- Coal Enhanced Resource Development Zones implementation.
- Potential expansion of the plan area to include all of the Elk and Bull River drainages.
- Delineation of the Working Forest to better define and protect the land base for industrial forestry and review of Timber Enhanced Resource Development Zones.
- Consideration of incorporation of the Living Rivers Strategy in some plan areas.
- Trans-Canada trail potential locations, feasibility and impacts.
- Management strategies for air quality
- Additional requirements and projects for plan implementation and enforcement.
- Habitat effectiveness benchmarks and proper functioning conditions for various habitats.
- Engagement of First Nations people in addressing First Nations values and in plan implementation.

APPENDIX 3.0 Agency Roles and Implementation Projects

Agency Implementation Role

Note that the regional Inter-Agency Committee (IAC) has the role of coordinating the various agencies' and public/private sector activities to ensure integrated delivery of work plan commitments. It is recognized that delivery of projects will actually occur through the work of the respective government agencies and commercial/public sectors. Where a government agency is anticipating approval of an operational plan or tenure application that may be inconsistent with this plan, referrals will be made to the Ministry of Sustainable Resource Management.

Ministry of Forests (BCFS)

The Forest Service is tasked with managing the timber and range resources on the Crown land base. It has the role of coordinating the Timber Sales B.C. program, as well as managing the various forest tenures occurring throughout the plan area. The Forest Service will only approve operational timber harvest and other applicable plans that are consistent with the SRMMP

The responsibility for public recreation management has resided with the Forest Service. At the time of writing, the BC Government is undergoing significant changes to its delivery models and infrastructure as it relates to public recreation management. As a result, the ability for government to fully participate in both operational recreational implementation tasks may be curtailed. Consequently, timelines and priorities for these issues may change or take on a different form.

Land and Water B.C. (LWBC)

LWBC is a Provincial Crown Corporation responsible for the tenuring and marketing of Crown lands. LWBC will review proposals for the tenuring of Crown land so as to address / facilitate the SRMMP. LWBC should ensure that key issues not yet dealt with in the SRMMP, such as recreational carrying capacity and public versus commercial use levels, are considered in reviewing tenure applications.

Ministry of Water, Land, and Air Protection (WLAP)

WLAP is a regulatory ministry governing air, land and water pollution control, fish and wildlife habitat and species protection, recreational fish and wildlife management, environmental emergencies, and protected areas. Within the context of the SRMMP, the agency will lead implementation (including enforcement) of access issues that directly involve habitat and species protection. It has yet to be determined which government agency will enforce access restrictions that do not involve habitat and species protection (eg. social choices regarding use).

Regional District of East Kootenay (RDEK)

The RDEK administers private land outside of incorporated municipalities, and is the primary local-government jurisdiction within the plan area. RDEK prepares land-use plans which depict zoning for various uses and activities in communities and rural areas, and is proposing to undertake a growth management strategy in the near future, to ensure that settlement pressures are dealt with effectively. RDEK planning initiatives should consider strategic direction in the SRMMP, and RDEK planners are encouraged to work with MSRM regional staff, and vice versa, in order to maintain planning consistency and coordination.

Implementation Projects

Table 3.1 contains projects intended to ensure implementation of the SRMMP (for a preliminary list of projects intended to monitor compliance with or provide information for plan amendment, see Appendix 2.0). Table 3.1 is not intended to be a comprehensive list of all projects. MSRM will work with the

SRMAC to confirm which of these (or other) projects are to be incorporated into a biennnial implementation workplan that identifies the priorities and necessary sequencing for implementation actions. The Nelson Regional Interagency Committee (IAC) will ensure the necessary staff and funding is available and committed by each government agency to complete these tasks before they are placed into the biennial implementation workplan. The IAC will also work with other levels of government and funding agencies, as appropriate, to ensure the biennial workplan is coordinated with other initiatives ongoing within the region.

The biennial implementation workplan will include:
1. Identification of priority projects.
2. Identification of key supporting actions that are necessary to complete the priority projects, including both actions that require the involvement of two or more ministries and those that are solely the responsibility of one agency, but are linked to other SRMMP Implementation Strategy projects.

Table 3.1: Implementation Projects

Theme/Area	Action	Comments	Priority	Responsibility
SRMAC	Establish Committee	Determine membership, terms of reference	High	MSRM
Economic Activity	Resource Development	Ensure that opportunities supported by the plan are not encumbered	High	SRMAC and Government Agencies
Recreation Access Management	Refinement of Mapping Products	Adjustment of polygon boundaries to better geographically reflect plan intent	High	SRMAC and MSRM
	Develop Print Media Strategy	Produce brochure for winter and summer	High	SRMAC and MSRM
	Review Recreation Development Proposals	Ensure that tenure applications are only approved which are supported by this plan. LWBC will recommend that proponents consult with the SRMAC where their proposals are not supported by the plan	High	LWBC
	Review Recreation Development Proposals	At the discretion of the SRMAC, assess public and commercial recreation proposals which do not comply with the plan	Moderate	SRMAC and MSRM
	Establish Priority Areas for Operational Control	Identify and recommend priority areas requiring immediate signing requirements	High	SRMAC and Government Agencies
	Develop Sign Standards	Design sign standards to establish consistency in sign appearance	High	SRMAC and Government Agencies
	Access Management	Install signage in priority areas and conduct access control operations in priority areas	High	SRMAC and Government Agencies
		Ensure that forest licensee deactivation of access roads should, where feasible, is conducted to facilitate the type of road access desired in the plan	High	Forest Service
		Initiate / maintain legislative or other closures to areas which are supported by this plan for wildlife reasons	High	WLAP
		Initiate / maintain legislative or other closures to areas which are supported by this plan for non-wildlife reasons		MSRM
		Develop and implement strategies to manage industrial access in order to maintain connectivity, minimize activity during seasonal periods when wildlife sensitivity levels are highest, and address road density and use issues		
Biodiversity	Refinement of OGMA and Mature seral spatial locations	Adjustment, where required, of OGMA and mature seral spatial polygons to better manage for these and other values (eg. to ameliorate isolation of timber).	High	SRMAC and MSRM
	Operational Plan Compliance	Ensure that forest licensees have provision in their harvest plans to comply with applicable plan old growth, riparian, visual and other guidelines	High	Forest Service
Various		• Implement research and inventory projects that contribute to management strategies that maintain the security, administration and stewardship of wildlife habitat. • Conduct sensitivity and cumulative impact		

		assessment analysis initiatives • Increase habitat effectiveness and the opportunity for genetic dispersal, seasonal and daily movement, foraging and reproduction of wildlife species (Appendix 24.0) at the landscape and stand level • Develop benchmarks for habitat effectiveness and proper functioning condition for WRC, Ungulates, ID wildlife, fish • Undertake projects to assess environmental and social carrying capacity, environmental sensitivity and compatibility analysis and cumulative impact assessments • Consider the results of Water Use Plans, when completed, for the Aberfeldie and Elk River dams • Establish measures and procedures to protect and maintain those habitats and species at risk which are not officially approved • Additional detailed work may be required beyond these objectives to address locally specific issues, including indicators and standards for limits of acceptable change		
Tourism	Planning	Develop a tourism opportunity strategy to define the specific new products that can be supported and are compatible with the strategic direction of the SRMMP		

Initiating Access Closures

The SRMMP sets recreational land use patterns and influences where different types of activities can occur. Legislated closures will be required over a number of key areas deemed environmentally or socially sensitive and where voluntary compliance is not likely (that is, where voluntary compliance will not prove to be effective in areas of high resource sensitivity). It will be important to critically re-evaluate the requirement for legislated closures as plan implementation proceeds, in order to determine if the existing legislated closures are necessary and to ensure that critical decisions in the plan are complied with. Legislated closures require varying lengths of time and consultation to implement, depending upon the specific situation and the type of legislation proposed.

Each ministry has its own form of closure oriented legislation, targeted for a specific purpose. For example, MSRM enables closures to specific recreational uses to protect the interests of other recreational uses, while WLAP enables closures to recreation use for the purposes of wildlife or habitat protection. Recreation closures initiated by LWBC are typically intended to designate an area for a specific use or protect the interest of a commercial operation that may be in jeopardy. The following table outlines the current legal framework that may be used to enable a legislated closure:

Act and Section	Ministry Responsible	Intent	Comments
Forest Practices Code of BC Section 105	MSRM	Used to protect a recreation resource by attaching a condition to an incompatible recreation or non-recreation oriented activity.	Determined by the District Manager. Requires local consultation. Relatively quick to implement.
Wildlife Act Section 109	Water, Land and Air Protection	Used to prohibit or restrict access for wildlife management purposes.	Requires an Order in Council and Minister authorization. Slow to implement.
Land Act Section 66	MSRM / Land and Water BC	Used to a use prohibit a type of recreation use upon Crown land within a specific area.	Requires an Order In Council and Minister authorization. Slow to implement. Rarely initiated.

APPENDIX 4.0 Draft Terms of Reference For The Southern Rocky Mountain Advisory Committee (SRMAC)

Definitions

"government": means the Provincial Government
"MSRM": means the Ministry of Sustainable Resource Management
"SRMMP" or "the plan": means the Southern Rocky Mountain Management Plan
"SRMAC" or "the committee": means the Southern Rocky Mountain Advisory Committee

Objectives

The SRMAC will liaise with government primarily through the Regional Director, MSRM, or his/her designate. For operational implementation issues, liaison may also occur directly with other government agencies or corporations as appropriate.

The role of the committee is one of making recommendations. The responsibility for decisions on plan direction resides with government. Specific duties of the committee will include:

- Recommending changes and improvements to plan objectives and direction to reflect new information or circumstances;
- Participating in plan support and monitoring;
- Providing advice for strategic and operational implementation, including monitoring indicators, and assisting with developing implementation strategies in key areas;
- Reviewing of proposals and developments for public and commercial activities, when the proponent or reviewing agency solicits the advice of the SRMAC, and, in doing so, providing recommendations consistent with approved plan objectives and management direction.
- Reviewing plan maps to ensure technical accuracy, and assisting government in increasing the resolution of mapping data as required; and
- Assisting in securing funding for implementation and monitoring requirements.

It is recognized that the SRMAC will not necessarily represent all public and commercial interests. However, other key corporate, bureaucratic and public entities at the local and provincial levels will have the ability to make recommendations to government.

Membership

- The committee will be composed of sectors that have either participated in, or are familiar with, the plan's development, and that represent a diverse cross-section of interests. Each sector will nominate a representative (and an alternate) who will act as spokesperson for that sector. Sectoral representatives may rotate with new appointments being submitted to the Chair. For the sake of continuity and efficiency, appointments for two-year terms are recommended.
- Government agencies will be represented on the committee.
- The committee chairperson will be determined by the Regional Director MSRM.
- Government shall decide which sectors are members of the committee. Nominations for additional sector membership will be submitted by the sector to the committee chairperson.
- The optimum size of the committee shall be between ten to fifteen members.

- Members of the committee shall not receive remuneration for their participation and will not normally be reimbursed for expenses associated with attending meetings.
- Sub-committees may be established, as needed, to address specific issues or projects, and may include non-committee membership if required.

Meetings and Communications

- The SRMAC shall meet on a regular basis, at least twice a year, or as required, at the discretion of the chair.
- Government will provide administrative support services in the form of mapping changes, meeting locations, and communication facilitation.
- The committee shall invite area- or issue-specific stakeholders to meetings where required.
- The committee shall develop a biennial workplan, consistent with the Terms of Reference, that identifies objectives related to the implementation and monitoring goals of the plan, for the following two years.
- Government shall provide relevant new information, where possible, as it becomes available and as requested by the committee.
- The members of the SRMAC will act in an advisory role to their respective groups in regard to implementation and interpretation of the SRMMP.

Process for Making Recommendations

- In developing recommendations to government, consensus from committee members is desirable, but not mandatory. Sectoral representatives will seek a common understanding regarding issues and provide consultative advice to MSRM.
- Participants will observe the following principles:
  - representatives must be able to demonstrate accountability to the sector or organization they represent. At the same time, they must also be able to demonstrate accountability to the process (i.e., the public and one another) by agreeing to participate in the process in good faith.
  - participants accept the concerns and goals of others as legitimate
  - the focus of this process is on interests and concerns rather than positions and demands;
- On behalf of the committee, the Chair will prepare and submit to government a brief report of discussions and recommendations following each meeting, where applicable.
- Committee recommendations regarding major and minor plan amendments will be conveyed to the Regional Director of the MSRM. The committee shall be kept informed of the final disposition of each recommendation.

Roles and Responsibilities of Committee Members

Each member is expected to:

- Ensure familiarization with the approved SRMMP objectives and management direction;
- Attend scheduled meetings and serve on sub-committees when requested;
- Respect the rights and opinions of other committee members;
- Help to establish SRMAC biennial workplan goals and objectives and ways to achieve them;
- Decline participation when a conflict of interest is possible; and

- Represent their constituency at all times by conveying sectoral, not personal, opinions to the committee. Members have a responsibility to consult with their sector membership to ensure their representational participation at the committee table.

The Chair will:

- Call and co-ordinate meeting dates, and set agendas;
- Preside over meetings;
- Present reports and recommendations to government for discussion and action;
- Provide direction and serve as spokesperson for the committee; and,
- Encourage an atmosphere conducive to productive and collaborative discussion.

APPENDIX 5.0 - BEST MANAGEMENT PRACTICES

Appendix 5.1 - Air Quality Management Principles and Objective

Air Quality Management should be guided by the following principles:

1. Acceptable air quality is everyone's right; protecting air quality is everyone's responsibility.
2. Acceptable air quality is an important contributor to a healthy community and a sustainable economy.
3. Achieving acceptable air quality requires that local, provincial and federal government agencies work together. Public and industry involvement is also necessary.

And the following objective:

> To achieve and maintain acceptable air quality by reducing the emission of those air contaminants that are causing unacceptable air quality, and by preventing future air quality problems from developing.

Fine Particulate Management Actions

Fine particulate matter (PM_{10} and $PM_{2.5}$) as the highest priority pollutant for reduction in the airsheds in interior BC. Ideally, we would be able to pinpoint the exact contribution of an individual fine particulate source to ambient levels in a particular area of the airshed. In reality, it is not possible to be so precise in establishing source priorities, because our information and understanding of contaminant actions is deficient. Also, contaminants do not move directly from source to receptor, but mix in complex patterns, particularly in the complex terrain and meteorological conditions that characterize this airshed.

The most important information that can be used to select sources for emission reductions are the emission inventory, the potential for exposure to poor air quality, the availability of more effective emission reductions technologies, and airshed meteorology.

Likely significant contributors of PM_{10} have been as:

- road dust.
- industrial sources including wood waste operations.
- Smoke from wood burning appliances, and backyard burning.

In addition to the relative sizes of emission sources, other factors that have been considered in selecting sources for reduction are:

- the potential to contribute to ambient PM_{10} levels;
- the potential for exposure of residents to unacceptable ambient levels; and
- the potential to upgrade emission prevention or treatment technology.

Another factor that must be weighed, particularly for small, widely dispersed sources, is the potential for local effects on air quality. This factor is particularly applicable to sources such as wood burning appliance and fireplace use, and commercial and residential open burning (land clearing and backyard burning, for example). Although individual contributions from these emissions are small relative to the industrial and road dust sources, they can have a significant effect on local air quality during poor dispersion conditions. Although direct sampling of the effect of these local sources is limited in this airshed, other jurisdictions with more significant sources have demonstrated their ability to produce high ambient fine particulate levels.

Consideration as to the availability of technology to reduce the major emission sources must be identified. When considering technology for reducing emissions from sawmill burners, pulpmill sources, road dust reduction and backyard burning, for example, it may be only necessary to look at other locations and jurisdictions to identify the potential for significant particulate source reductions. Additional reduction technology and emission prevention methods will undoubtedly be identified for subsequent management phases.

Dust from Street Sanding, Unpaved Areas and Other Sources

Recommendations:

> Municipalities, the Ministry of Transportation and Highways, and contracted agencies should use winter abrasives that generate less fine particulate matter;
>
> Frequent sweeping of municipal streets and additional dust control on unpaved high traffic routes, to further reduce dust levels;
>
> Consider expanded hard surfacing for problem areas.
>
> Municipalities require paving of all traffic areas permitted for new industrial and commercial developments; and
>
> Municipalities establish guidelines and standards, for all paved commercial and public parking lots, to mitigate the release of fine dust from sanding and sweeping, and from storage and disposal of the sweepings.

Although road dust is a much less concentrated source of fine particulate than the major industrial point sources, the amount of dust that is estimated to enter the air, particularly from street sand prior to spring cleanup, is significant. Because the significance of individual non-point sources, such as street dust, is more difficult to assess than for industrial sources, it is necessary to classify these sources according to size, proximity to residences and ease of reduction.

The highest priority is winter street sanding, given the high fine silt content of the sand, and relatively large amount of material used. Removal of the fine silt following snowmelt is often delayed because of freezing temperatures, allowing release of fine particulate into the air by traffic and wind.

Another source of dust that likely contributes to poor air quality is spring parking lot cleaning. This source is amenable to reduction through use of equipment that is readily available.

Backyard Open Burning Recommendation:

> Municipalities ban all open burning on properties of less than 5 acres, and on all properties
>
> The Regional District continue to advise residents of the hazards of open burning, and the availability of facilities to reuse, compost or properly dispose of burnable materials at the Regional Landfill.

Burning of combustible yard residues (grass, construction debris, cuttings) can be a harmful local source of smoke, wastes useful materials, and is unnecessary in this airshed. Composting of yard and garden residues can be done on site, or by delivering the compostable materials to the Regional District's Regional Landfill centralized compost site. Reusable construction materials can be placed at the Landfill for salvage and reuse by other residents.

The Regional District should support home composting efforts by funding a compost demonstrations, and by offering volunteer master composter training sessions.

The Ministry of Water, Land and Air Protection currently bans all such burning during air quality advisories and, over the past two years, the Ministry has publicized the need to eliminate burning of yard wastes and lawns.

Wood Burning Appliances

Recommendation:

> **Municipalities promote minimization of the use of wood burning appliances in the City;**
>
> **Municipalities prohibit the burning of wood in residential**

neighbourhoods during PM_{10} air quality advisories, except where wood is the primary heating source; and

Municipalities require that any new or replacement wood burning appliance meets the standards in the BC*Solid Fuel Burning Domestic Appliance Regulation.*

Some City and Regional District residents continue to burn wood, in heaters, stoves and fireplaces, as a primary or auxiliary source of heat. In the more densely populated areas of the City, wood burning can significantly contribute to high levels of fine particulate, particularly during the temperature inversions which occur frequently in winter. While the total elimination of domestic and commercial wood burning is not recommended, restrictions are necessary to improve air quality in high density areas.

The effects of commercial wood burning in operations such as bakeries and restaurants must also be restricted where necessary to protect nearby residents from fine particulate pollution. Municipalities should review applications for new and retrofitted operations with MWLAP to determine if these operations are located appropriately or if emission controls should be installed.

Community And Regional Planning

Recommendations:

Air quality considerations be incorporated into Official Community Plans, including transportation efficiency and alternative transportation, and into the Regional District Community Plans during the next plan reviews;

The City and Regional District identify new areas for heavy industrial development, taking potential air quality effects into account; and

Municipalities refer all proposals for significant new emissions for review by MWLAP

Community development plans should also take into account the benefits and constraints of different air quality management options on economic development.

Prevention of Air Quality Problems

Recommendations:

MWLAP evaluate the acceptability of new sources of air contaminants, especially PM_{10}, TRS, SO_2 and NO_x , based on use of the "lowest achievable discharge rate" (See Glossary.); And

> Municipalities promote reductions in vehicle emissions and request the Insurance Corporation of BC To conduct a mobile emission testing program.

While the main emphasis of the Management Plans is on reduction of fine particulate emission sources, actions should be taken to prevent additional air quality problems from developing. These actions should apply particularly to those types of air contaminants that have the potential to increase significantly with future developments in the airshed, even though their ambient levels are currently acceptable.

The best means of pollution prevention is to anticipate and mitigate potential air pollution problems before they develop. The difficulties and delays that have been encountered in finding ways to reduce fine particulate levels illustrate the benefits of practicing pollution prevention. Experience with eliminating beehive burners illustrates that the most cost effective methods of pollution reduction can result from the improved planning associated with a prevention approach.

Although road vehicles may not be significant sources of PM_{10} or other contaminants that have exceeded air quality objectives in the overall airshed, they have the potential to affect air quality in high traffic areas. Road vehicles were shown to be significant sources of other contaminants, such as NO_x, carbon monoxide (CO) and volatile hydrocarbons (VOC).These emissions could be reduced through proper vehicle maintenance.

The intent of the emission testing is not to start an "Air Care" program in this airshed, but to provide information that can be used to educate the public, business and industry on ways to reduce vehicle emissions.

Management Of Poor Air Quality Episodes

Recommendations:

> MWLAP require owners of the most significant fine particulate sources to provide plans for temporarily reducing emissions during air quality advisories.

The other area where prevention should be practiced is episode management. Since pollution episodes occur whenever weather conditions prevent adequate dispersion, prediction of these conditions could enable avoidance of an episode if major emission sources could be temporarily reduced. Although the frequency of episodes is expected to be reduced by the significant source reductions identified in the Plan, extreme meteorological events will likely still produce periods of unacceptable air quality.

Reduction in industrial wood burning should also be done where it is predicted to improve air quality during PM_{10} advisories. If prediction of those meteorological events most responsible for causing episodes can be done accurately, then the major emissions could be reduced prior to the onset of episodes. Diversion of wood residuals to uses outside the airshed may be required during episodes, and could be facilitated by a resource pooling agreement among the major source owners. Episode alleviation plans should link actions to the severity of the episodes.

Responsibilities of the Management Agencies

Recommendations:

> Prior to finalizing the Management Plan, the management agencies make an agreement on the responsibilities for consultation on permitting, community planning, and other administrative and regulatory actions that will affect air quality; and
>
> The management agencies establish an Airshed Management Steering Committee to oversee the implementation of the Management Plan Actions, and to establish subgroups as needed to manage specific tasks.

In order to ensure the effectiveness of the management actions outlined in this Plan, communication and coordination is required among the management agencies that must implement the Plan. There are many areas of decision making by the management agencies that have the potential to affect air quality, and to increase the effectiveness of the management actions prescribed in the Plan. Prior to implementing the final Plan, the management agencies should identify ways to maximize the effectiveness of the recommended actions.

Funding Needs and Cost Sharing

Recommendations:

> Sharing of current and future monitoring costs be based on emission contributions to the airshed, and other factors contributing to unacceptable air quality.

Appendix 5.2 Domestic Watershed Best Management Practices

In watersheds which are licensed for human consumption (see map B.10.1) but which are not designated community watersheds, the following Best Management Practices will be considered in forest and mineral exploration planning, operations and monitoring.

1.0 Watershed Classifications

Map B.10.1 shows 3 classes of watersheds which are described as follows:

Class 1 Watersheds

These watersheds are associated with springs and very small creeks which do not have clearly defined drainage or catchment areas. Often these small water sources are located on "face units" (populated areas between major streams). Face units may encompass many small streams and springs which support domestic licensing. Face units will often be mapped as one area because of the difficulty of defining these micro drainage areas without on-the-ground investigation. There may also be streams within the mapped face unit which are not licensed for domestic use. It will be important for the forest/mineral proponent to identify unlicensed streams early in the process so that unnecessary assessments and notification of water users can be avoided.

Class 2 Watersheds

These are small watersheds having drainage areas which are definable on existing topographic mapping and, less than 500 ha (5 km^2).

Class 3 Watersheds

These are watersheds with a drainage area of 500 ha (5 km^2) to 200,000 ha (200 km^2). To aide in the assessment procedure in these larger watersheds, sub-basins may be shown on the mapping.

2.0 Assessment and Detailed Mapping for Forest Activities

Forest development plans should consider applying an assessment of proposed activity for the 3 classes of watershed as follows:

Class 1 watersheds: A field mapping exercise is suggested with the main objective being to maintain the integrity of recharge areas and channels.

1. Obtain high quality topographic maps and air photos and mapping of water intake locations for the area in question.
2. Transfer the locations of the water intakes to a large scale topographic map.
3. Confirm intake locations (by field work if necessary) and transfer to the topographic maps. If the stream courses are mapped inaccurately, indicate the correct locations on the topographic maps. In order to find the intakes, it may be necessary to interview the water licensees. It may be necessary to go on private land and appropriate permission should be obtained for doing so. Air photographs will be useful for field checking.
4. Map the streams above the water intakes on the topographic map by walking upstream of the intake. It may be possible to quickly affirm that the TRIM map is correct. If it is not correct, use compass and chain methods or GPS units to enable transfer of actual stream locations onto the topographic maps. It should be noted that many first order streams disappear and reappear as one moves upslope and a

thorough search should be made of all field evidence of seepage zones and streamflow above the first disappearance of the streams. Indicate on the map where an actual channel exists (solid line) and where you infer flow (dashed line). Indicate evidence of flowing water and seepage separately. Mapping should be done during periods of high flow (e.g. shortly after snowmelt) when flow pathways are most evident.

5. Use the topographic map to outline the inferred drainage area contributing to each water source.
6. Use this map to plan the location of roads and logging activity. Roads have the potential to divert water away from areas used for water supply. Harvesting activities must be planned such that the flow remains in the natural channels. Small changes in drainage patterns can affect downslope water supplies.
7. Avoid locating roads within 50m of the water intake. If the road is constructed through a seepage area, it should be constructed in such a manner that slope seepage is maintained in its present location. Specialized road construction techniques such as a permeable road prism or use of geotextile fabrics may be necessary in selected seepage zones to maintain the natural subsurface flow patterns.
8. When the road is surveyed in the field, crossings of each water source should be clearly ribboned with the name of the source and "domestic water supply" written on the ribbon. The locations of the crossings are to be pointed out to those doing the road construction.
9. When the road is constructed, signs should be placed at each water supply stream crossing which name the source and "domestic water supply".
10. Road construction should be carried out in a manner which minimizes impacts to water quality.
11. The road should be designed in such a manner that road surface and ditch drainage does not directly enter a water supply stream. High quality surfacing material should be used immediately adjacent to stream crossings.
12. All personnel doing activity in the area should be informed that they are operating in a water supply area and that all their activities including personal hygiene should respect the maintenance of the downstream water supply.
13. In general roads in this class of watersheds should remain open only as long as they are required. When road use is complete they should be rehabilitated with special attention given to maintaining natural drainage patterns.

Class 2 Watersheds: Areas defined as Class 2 watersheds on the mapping should undergo a detailed procedure as described in the box below. The objective is to confirm channel and intake locations and to plan upstream activities such that new sediment sources are not created. The procedure for Class 2 watersheds requires less field work because these watersheds are topographically defined. A watershed report card (see Class 3 Watersheds) is required. Since results from the report card become less dependable with smaller watersheds, the report card should not be used by itself to define hazards in watersheds under 5 km^2(500 ha).

1. Obtain high quality topographic maps and air photographs and the map of water intake locations for the streams in question.
2. Transfer the locations of the water intakes on the water intake map to a large scale topographic map.
3. Walk stream courses above water intakes. It may be possible to quickly affirm that the TRIM map is correct and further ground verification is not necessary. When mapping does not appear to be correct, use compass and chain methods or GPS units to enable transfer of stream locations onto topographic maps.
4. Use the topographic map to estimate the drainage area.
5. Overlay available terrain information to plan the location of roads and logging activity.
6. Avoid locating roads within 50 m of any water intake or on unstable terrain.
7. When the road is surveyed in the field, crossings of each water source should be clearly ribboned with the name the source and "domestic water supply" written on the ribbon. The locations of the crossings are to be pointed out to those doing the road construction.
8. When the road is constructed, signs should be placed at each water supply stream crossing which name the source and state "domestic water supply".
9. Road construction should be carried out in a manner which minimizes impacts to water quality.
10. The road should be designed in such a manner that road surface and ditch drainage does not directly enter

a water supply stream. High quality surfacing material should be used immediately adjacent to stream crossings.

11. All personnel doing activity in the area should be informed that they are operating in a water supply area and that all their activities including personal hygiene should respect the maintenance of the downstream water supply.
12. In general roads in this class of watersheds should remain open only as long as they are required. When road use is complete they should be rehabilitated with special attention given to maintaining natural drainage patterns.

Class 3 Watersheds: Watersheds defined as class 3 on the mapping should undergo an assessment utilizing a domestic watershed report card. This is a reconnaissance level analysis intended to identify several broad categories of risk from past or planned forest harvesting. When high hazard levels are indicated, it is expected that these will be addressed in the forest development plan.

The domestic watershed report card is comprised of several key indicators which were developed for the Interior Watershed Assessment Procedure (IWAP). Larger Class 3 watersheds may have sub-drainages delineated on the mapping. The report card indicators are to be generated for each sub-drainage.

The watershed report card uses the following indicators:

a) peak flow index (including the equivalent clearcut area [ECA] calculation)
b) road density for entire sub-basin (km/km^2)
c) no. of stream crossings (no./km^2)
d) no. of landslides (no./km^2)
e) roads on unstable slopes (km/km^2)

These 5 indicators should be recorded in the following format:

Form 1. Watershed report card

Impact Indicators	Sub-basin name							
a) peak flow index (also record ECA % in this space)								
b) road density for entire sub-basin (km/km^2)								
c) # of stream crossings (no./km^2)								
d) # landslides visible on 1:20000 photos(no./km^2)								
e) roads on unstable slopes (km/km^2)*								

* Class IV and V terrain where terrain mapping is available or otherwise on slopes greater than 60%.

Hazard ratings will be determined by the following Hazard Index table:

Impact Indicators	Hazard rating low	 medium	 high
a) peak flow index	<0.3	0.3-0.42	>0.42
b) road density for entire sub-basin (km/km^2)	<1.5	1.5-2.1	>2.1
c) no. of stream crossings (no./km^2)	<0.4	0.4-0.6	>0.6
d) no. of landslides (no./km^2)	<0.1	0.1-0.18	>0.18
e) roads on unstable slopes (km/km^2)	<0.15	0.15-0.25	>0.25

NOTE: Hazard ratings which are derived from this table may not reflect true conditions in the watershed. Therefore it is important that hazard scores be used only as a course filter to help identify potential problem areas and/or to aide in the prioritization of watersheds for application of a more complete watershed assessment. When scores are tending to the high end of the scale, the FDP should state how the possible hazard will be addressed.

The following is an illustration of how the hazard rating might be used:

- If indicator "a)" is high - discuss further assessment (i.e. channel assessment) needs with agency specialists and or consider alternate harvest schedules or areas;
- If indicators "b)" to "e)" are high - confirm indicator with field review, discuss assessments with agency specialists, consider reducing new road development and/or a road reclamation strategy.

3.0 Assessment and Detailed Mapping for Mineral Exploration Activities

Mineral exploration and related activities create more localized impacts than do forest activities, therefore, the same general assessment and mapping procedure can be used in all three classes of domestic watershed.

When activities which require a Mines Act Permit (mechanized soil disturbance) are proposed within a domestic watershed, the District Inspector may require all or some of the following based on proposed amount of disturbance, sensitivity of the area and proximity of water intakes:

1. Obtain a 1:20,000 TRIM map (or better quality map if available) of the area, the largest scale air photo pairs available and the water intake map)
2. Transfer the locations of the water intakes on the water intake map to a large scale topographic map (i.e. the 1:20,000 TRIM map). Provide a description of the intakes with accompanying photographs.
3. Map the courses of the streams above the water intakes on the topographic map by walking upstream from the intake to the area of proposed activity. It may be possible to quickly affirm that the TRIM map is correct and further ground verification is not necessary. If it is not correct, use compass and chain methods or a GPS to enable transfer of true stream locations onto the topographic map. Generally, inaccuracies in TRIM stream locations occur more on small streams that are poorly defined by contours.
4. A reconnaissance level terrain stability assessment and detailed surface soil erosion assessment and mapping may be required by the District Inspector in particularly sensitive areas.

5. Use the map with an overlay of the terrain map (if a terrain stability assessment has been required) to plan the trail building and other mining or exploration activities. All proposed works are to be noted on the map.

4.0 Terrain Hazards

- A person should not propose harvesting of an area in a domestic watershed if the area is subject to a high likelihood of landslides following timber harvesting.
- Reconnaissance level terrain mapping is normally required in domestic watersheds.

5.0 Roads

- A road in a domestic watershed should not be located within a 50 m radius upslope of a water intake.
- Roads should be constructed so as to minimize disruption of surface and subsurface flow pathways particularly in spring recharge areas.
- A person who constructs, modifies or deactivates a road in a domestic watershed should:
  (a) notify water licensees or their representatives of the start date of road construction, modification or deactivation at least 48 hours before the start of road construction, modification or deactivation if it is anticipated that sediment could reach a water intake;
  (b) ensure that rock containing significant amounts of sulphide minerals, and which may have potential for generation of acid, is not used for road construction or modification.

6.0 Harvest Levels

Harvest levels are determined by calculation of the equivalent clearcut area (ECA) as is necessary for the watershed report card. This is done for the domestic watershed as a whole and for major sub-drainages within the domestic watershed. The concentration of harvesting on smaller areas should also be considered.

ECA's in sub-basins

- The maximum ECA in any basin larger than 250 ha, that has not been individually considered in the report card, should not exceed 30 % of the area. If it has been considered individually, the report card will apply.

ECA's above sensitive sites

- When cutblocks are proposed on areas which drain onto class IV or V terrain (or slopes over 60% if terrain mapping not available), the ECA should be limited to 20 % of the area draining onto the sensitive site.

7.0 Range

Range plans, which include range use and range stewardship plans, should indicate known domestic intakes and actions taken to accommodate this resource use. The Range plans should indicate levels of use, strategies for wetlands and riparian areas, and other provisions.

Domestic water users can review range plans and provide comment. The Ministry of Forests (MOF) district manager approves range plans and can require amendments if special circumstances warrant. In addition, the district manager can require security for the performance of obligations under a range plan.

If problems or special circumstances arise with respect to range use in a domestic watershed, the initial preferred approach is for the water user to deal with the MOF district manager. In cases where it is suspected that a water supply has been contaminated, the district manager should promptly notify and consult with staff in all appropriate agencies in order to locate the appropriate expertise to confirm and respond to the problem. Occasionally, an inter-agency team may be required to resolve contentious situations.

8.0 Timber Harvesting

A person carrying out a timber harvesting operation on applicable land within a domestic watershed should not, except to provide access to, or to maintain, a water supply intake, cut or damage a tree that is closer than 50m upslope of a water supply intake and must protect known water supply intakes and infrastructures.

9.0 Silviculture

- The use of livestock to carry out site preparation or brush control within a riparian management area, should be guided by a suitable management or animal control plan which addresses maintenance of water quality.
- The use of pesticides should be managed by an Integrated Pest Management plan, where non-toxic alternative treatments and long term prevention of pest problems should be considered. Opportunities for public input should be provided in contentious areas.
- A 10m fertilizer-free zone should be maintained around any flowing stream that is observable from the air. Fertilizer application close to streams is sometimes beneficial to water quality (e.g. hydro-seeding of road banks at stream crossings).
- Fertilizer should not be applied within 50m upslope of a water intake.
- Fertilizer should be applied during cool and moist conditions (not during the summer).

10.0 Recreation

- The construction of recreation facilities within riparian management areas should be avoided whenever possible.

- In general, activities such as motorized recreation and camping should not be encouraged in smaller domestic watersheds (< 10 km^2).

11.0 Mineral Exploration Practices in Domestic Watersheds

- Avoid locating roads, drill sites, trenches or other works within 50 metres radius upslope of a water intake or on unstable ground, unless authorized by the District Inspector.
- Exploration drilling and the establishment of pump intakes in domestic water sheds should not be located within 50 metres radius upslope of a water intake.
- Roads, drill sites, trenches or other works should not interfere with any known subsurface flow paths of a drainage area that contributes to a spring.
- When a road location is surveyed in the field, the location of the crossings of each water source stream should be clearly ribboned with the name of the source and "domestic water supply" written on the flagging. The locations of the crossings are to be pointed out to those doing the construction.
- When the roads are constructed, signs are to be placed at each water supply stream crossing which name the stream and indicate "domestic water supply".
- Trail, drill pad, trenching and other works should be carried out in such a manner that adverse impacts on water quality are minimized. For instance, sumps shall be utilized to contain drill cuttings and mud. Drilling muds and fluid additives shall be of a non-toxic and non-hazardous nature.
- Works should be designed and constructed in such a manner that surface drainage is prevented from directly entering a water supply stream. Where possible, works should be designed and constructed such that water drains away from the stream. Specialized construction practices, operating practices and materials (such as filter fabrics, high quality surfacing materials etc.) may be required to be utilized. For instance impervious drill sumps with drilling fluid recirculation may be required in select instances.
- All personnel working on the project must be informed that they are operating in a water supply area and that all activities including personal hygiene must respect the maintenance of the downstream water supply.
- In general works shall be reclaimed as soon as practicable, when they are no longer required.
- A person who constructs, modifies or reclaims a road or exploration trail in a domestic watershed should; (a) notify water licensees or their representatives of the start date of road construction, modification or reclamation at least 48 hours before the start of road construction, modification or reclamation if it is anticipated that sediment could reach a water intake; (b) ensure that rock containing significant amounts of sulphide minerals, and which may have potential for generation of acid, is not used for road construction or modification.
- The District Inspector may require drill holes that make water to be sealed with cement.
- Trenches should be located or oriented to minimize inflows of surface water.

- If trenches intercept the water table or groundwater flows, work should not continue until it can be determined that domestic water supplies will not likely be adversely affected and the District Inspector has approved a mitigative strategy.

12.0 Planning Framework and Public Input

For forest activities, the following chart summarizes the first stage of planning in domestic watersheds.

	Class 1	Class 2	Class 3
Watershed type	Springs and very small streams	Small streams with defined drainage area <500 ha.	Larger streams with defined drainage area >500 ha.
Objective	Maintain water quality, quantity and timing of flow.	Maintain water quality, quantity and timing of flow.	Maintain water quality, quantity and timing of flow.
Watershed characteristics	Very small streams and spring recharge areas often with indistinct catchment boundaries and channels. Drainage patterns and sensitive areas can not usually be determined from existing mapping.	Erosion prevention is the principle concern. Sediment is likely to reach intakes. Streams may be of sufficient size to cause debris flows or bedload movement. Peak flow becomes a concern in larger streams in this class.	Slope failure, sediment delivery and channel stability are the key factors in maintaining water quality. Peak flow is a concern.
Strategy	Detailed mapping required. Forest development plan should address hazards for specific local conditions.	The domestic watershed report card may prove useful but must be accompanied by ground-truthing local conditions. Forest development plan should address hazards.	Reconnaissance level assessment required using domestic watershed report card. In larger watersheds assessment by sub-drainage becomes important. Forest development plan should address hazards.
Target conditions	Avoid problem areas. Minimal disturbance of sub-surface drainage patterns and surface channels. Recommend ECA < 30%.	Avoid problem areas which could result in sediment movement. Minimize roads and stream crossings. Recommend ECA < 30%.	Distribute cut by elevation and sub-drainage to reduce peak flows. Mitigative action plans are required for problem areas. Recommend ECA < 35%
Data requirements	Recommend level B or C terrain and soils mapping. Detailed mapping of drainage patterns, drainage areas and water intake and stream locations.	Recommend level B or C terrain and soils mapping. Detailed mapping of drainage patterns and drainage areas may in required in portions of the watershed.	Recommend level D terrain and soils mapping to ensure the effective application of the domestic watershed report card.

In the second stage of planning, the forest licensee or SBFEP should incorporate the assessment information and recommendations into the forest development plan. Riparian management and other forest management practices particular to domestic watersheds should be incorporated into the various operational plans.

When the forest development plan is advertised for public review, the forest company should make a reasonable attempt to notify the affected water licensees that:
a) the forest development plan is being offered for review (date, time, place);
b) the forest development plan proposes harvesting or roads in the domestic watershed.

This process will ensure that water licensees are notified about the proposed activity and are aware of their opportunity to comment on the forest development plan. Public input would be facilitated by the inclusion of the watershed assessment which will give water users an indication of existing and proposed impacts to the watershed.

The responsibility for approving forest development plans which cover areas in domestic watersheds, rests solely with the MOF district manager

This guideline should be considered baseline management which can be applied to all domestic watersheds regardless of the number of users or other management issues. Obviously, there are some domestic watersheds where the consequences of a damaged water supply are very high and others where the consequences are relatively low. In some high consequence areas, it is expected that more planning, assessment, monitoring and public involvement will be necessary to address all issues.

For mineral exploration activities, the need for public consultation will be considered on a project-by-project, site-specific basis when activity is proposed in domestic watersheds.

13.0 Contingency Planning for Domestic Watersheds

Forest Activities

Contingency planning is based on the principle of *immediate response* to water supply problems. It is important for all parties to be aware of initial actions and additional planning that can be put into place before problems with water supply are experienced. When water users know that forest activities are occurring upstream, it is usually a simple matter to inform either the forest company or Ministry of Forests staff to initiate action to investigate a water supply problem. Such complaints are taken seriously and are always investigated. If the problem is of a more serious nature or there is a threat to health, the local medical health officer and Land and Water BC should be contacted in the initial stages.

These immediate response procedures may not address all of the concerns of water users, such as the determination of alternate emergency water supplies. In these cases, it may be advisable for the water users, the resource developer and Ministry staff to jointly agree on a contingency plan for that specific area. Typical issues to be addressed in a specialized contingency plan are as follows:

- The contingency plan will normally apply only to forest activities on Crown lands within the domestic watershed. Water users can expand the focus to broader issues (e.g. private land or other resource uses) by establishing agreements with other parties.
- The contingency plan should identify:
  - a list of participants
  - names, addresses and phone numbers of the initial contacts to ensure proper action
  - procedures for the provision of alternative water supplies for the water users serviced by the domestic watershed. These can include, for example, the use of water tankers, wells, or pipelines from adjacent drainages;
  - in some cases, a description of procedures to mitigate some potential water supply impacts (e.g., the construction of settling ponds, the laying of bypass pipe, and construction of a filter system to clarify water).

General roles and responsibilities

Whenever there is an event which adversely impacts the quality or quantity of water within a watershed by disrupting or damaging a water supply or by posing a health risk, every effort shall be made to re-establish the supply, or mitigate harmful effects, as quickly as possible. In some situations this may require that the participants undertake the necessary remedial action using any available resources before responsibility is determined.

The roles and responsibilities of the participants may vary between plans. The remainder of this section summarizes typical roles and responsibilities.

Water licensees

- Be responsible for the installation and maintenance of systems consistent with their licensing, and capable of handling the natural ranges of water quantity and quality from the source, including sediment loads.
- Participate in field inspections and reviews of road construction, logging operations and other resource developments and advise the government ministries and resource licensees of their concerns.
- In cooperation with the appropriate agencies and other resource licensees, restore a disrupted water supply as quickly as possible to minimize the impacts on the water users.
- Assist other resource users in the rehabilitation of the water resource and water systems where there is an impairment of water quality or quantity due to resource development.

Ministry of Health

- Upon request, assist with the emergency investigation and response in the event of impairment or disruption of water quality or quantity.

Ministry of Forests

- Direct Ministry of Forests tenure holders to rectify situations arising from activities authorized by the ministry which have the potential to impair or degrade water quality or quantity.
- Through the district manager, initiate repair of damage to a water supply if a Ministry of Forest tenure has expired.
- Upon request, assist with the emergency investigation and response in the event of impairment or disruption of water quality or quantity.
- In cooperation with appropriate provincial ministries, adjudicate disagreements over responsibilities and determine what remedial actions are required and by whom, as legislated under the *Ministry of Forests Act*, *Forest Act*, *Range Act*, and other applicable legislation.
- Assume the role and responsibilities of a forest licensees, as set out in this section under "Resource licensees and tenure holders", when the Ministry of Forests carries out operations under the BC Timber Sales Program.

Ministry of the Solicitor General (Provincial Emergency Program)

The Provincial Emergency Program (PEP) helps local governments and provincial ministries prepare for, and respond to, disasters which threaten life and property.
PEP may:

- Assist in providing emergency potable water in the event of an emergency which causes damage to or loss of a water supply which is beyond a water purveyor's or a licensee's ability to resolve.
- Act as a facilitator in resolving an human or environmental emergency.
- Provide emergency financial assistance to others for the purposes of repairing a damaged water supply through the Disaster Financial Assistance Program.

Forest licensees and tenure holders and their contractors

- Advise affected water licensees of planned interruptions or potential sediment increases as a result of their activities.
- Immediately advise the water licensees and the Ministry of Forests of any situation for which they are responsible, or which they observe, which is potentially harmful to water quality or quantity.
- Immediately take remedial action to correct any situation arising from their activities which may potentially impact water quality and quantity, or otherwise damage a water supply system.
- Cooperate with the water purveyor or licensees, and the appropriate agencies, to restore a disrupted water supply as quickly as possible, thereby minimizing the impacts on the water users.

Determination of responsibility

The objective of the contingency plan is to have all water supply problems resolved as quickly as possible and, where necessary, to determine responsibility following rehabilitative work. Where damage to a water supply occurs:

- If a contractor or forest licensee is on site, the contractor or licensee and a representative of the water users should endeavor to determine the nature of the problem and the responsibility for the impairment, and agree upon a procedure to correct it. This should be done within 12 hours of impairment being reported.
- The Ministry of Forests district office shall be notified immediately of any impairment which cannot be corrected within 12 hours.
- Where the forest licensee and the representative of the water users cannot agree on the type and extent of, and responsibility for, remedial action, they shall immediately notify the Ministry of Forests to request their involvement.

The contingency plan is intended to expedite local solutions to water-related problems, but does not preclude a private person or corporation from pursuing individual legal remedies for damage to water quality or quantity.

Mineral Exploration Activities

There are no provisions for routine contingency plans due to the relatively low level of impact to land and water resources of mineral exploration. However, the need for a contingency plan will be determined on a project-by-project, site-specific basis.

The District Inspector will set the requisite reclamation security, based on appraisal of amount required to rehabilitate site to standards dictated by the Mines Act and Mineral Exploration Code.

Appendix 5.3
Risk Assessment Procedure for Proposed Resource Development Activities Above Alluvial and Debris Torrent Fans

By: Dwain Boyer[1]

Abstract:

Alluvial and debris torrent fans are common landforms in Kootenay Region of the Province of BC. Many of the fans are relic features; products of the last deglaciation period. However, many remain active or potentially active. Rapidly melting snow, heavy rains, channel blockages and/or landslides can result in avulsions and/or debris torrent or debris floods on these fans. Private and public lands, infrastructure and people occupying the fans are at risk of being damaged during these extreme events. For the most part, these events are naturally occurring. However, resource extraction activities, such as timber harvesting and mining, can increase the risk by increasing peak flows and/or the number of landslides. There are also emerging concerns with climate change due to global warming. Predictions include the possibility of warmer temperatures and more extreme storm events. Over the last few years, the Ministry of Water, Land and Air Protection (formerly, Ministry of Environment, Land and Parks) has mapped many of these fan areas so that forest licensees, wood lot owners and mining companies can be aware of these risks when planning development in watersheds. The object of this paper is to present a procedure for assessing this risk.

---

[1] Dwain Boyer, P.Eng., Engineering Section Head, Ministry of Water, Land and Air Protection, Nelson, BC

1.0 Purpose

There are many alluvial and colluvial fans along populated valley bottoms in the steep mountainous terrain of south east corner of British Columbia, Canada. During periods of high runoff, channels can shift (Figure 1 and 2) and debris flows can reach valley bottoms (Figure 3) with devastating effects on people and property. Timber harvesting and road construction in watershed areas above these fans can increase the frequency and magnitude of floods and debris flows on the fans. Terrain Stability Field Assessments, required by the Forest Practice Code (FPC), can reduce risks associated with individual road segments and cutblocks in areas where they are required. However, except in Community Watersheds and some high value fishery streams, watershed scale risk assessment procedures are not required. In addition, there is no recognized standard procedure for the preparation of a watershed scale risk assessment report.

In this paper, "alluvial" refers to fans built up from sediment carried by floodwaters, while "colluvial" fans are formed mainly by debris flows, a type of mass movement also commonly called debris torrents.

The purpose of this document is to propose a procedure to assess the additional risks associated with resource development activities to people and property situated on these fans.

Hwy 3A bridge washout: 1956

Figure 1: Duhamel Creek Fan: 1956

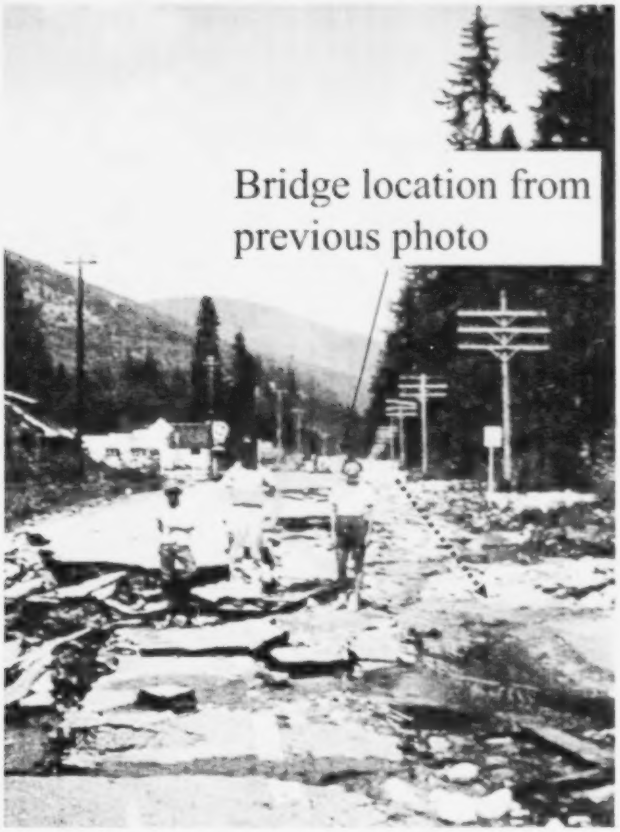

Bridge location from previous photo

Figure 2: Duhamel Creek Fan: 1956

Pictured above is one of two cars lost by the Schultz's when they were swept downstream by the mud slide.

Figure 3: Birtchland Creek Fan Debris Flood 1982.

2.0 Existing Risk Assessment Reports Related to Public Safety

This section identifies existing reports and procedures that deal with resource development risk assessments.

2.1 Interior Watershed Assessment Procedure

The Forest Practice Code (FPC) Watershed Assessment Procedure Guidebook (WAPG) (1999) is the only legislated requirement for a watershed scale risk assessment dealing with public safety on fans. Section 14 (1) of the Operational Planning Regulation (OPR) states that a person proposing a forest development plan in a community watershed area must first carry out a watershed assessment. Section 14 (2) of the OPR states that watershed assessment for Community Watersheds in the interior of BC must be carried out in accordance with the WAPG or equivalent. The guidebook states that the reporting hydrologists and the Watershed Assessment Committee must identify and assess downstream flooding and debris flow risk. The guidebook, however, was written primarily to assess risks to community drinking water supplies. The guidebook does not provide direction on how to assess risks to people and property on a fan at the outlet of the watershed.

2.2 Terrain Stability Field Assessments

Section 2.5 of the FPC Forest Road Regulation requires a person proposing to construct roads in areas with moderate or high likelihood of landslide activity to carry out Terrain

Stability Field Assessments (TSFA). Section 16 of the Operational Planning Regulation (OPR) states that TSFA reports are required for any cutblock proposed in areas with moderate to high likelihood of landslides in community watersheds. Section 17 of the OPR requires TSFA reports for all cutblocks in areas with a high likelihood of landslides. The TSFA reports provide risk assessments for cutblocks and/or road segments in some areas of a watershed where new development or road deactivation work is proposed. Cumulative and off-site effects of roads and harvesting in watersheds are often not considered.

2.3 Perry Ridge Risk Assessment Report

A overview risk assessment report was prepared for the Perry Ridge area in the Slocan Valley (Boyer, et al 1999). This is an example of a strategic level risk assessment which is not required by regulation. After identifying geologic and hydrologic hazards in the study area the report provided an assessment of the existing risks posed to life and limb, property and water supply. Anticipated risks associated with proposed road building and logging on Crown land were then determined. Several streams discharge onto populated alluvial and colluvial fans at the base of the ridge. Several map products, not usually available for forest development planning, were used in the study. These included geological hazard maps for the private land on the valley bottom, stream channel surveys and a total chance logging plan. The report provided strategic level advice on where higher risk areas exist, where more detailed professional review is required and suggests measures to reduce risks.

2.4 Ministry of Water, Land and Air Protection

Under Section 82 of the *Land Title Act* a person proposing to subdivide property in areas subject to flooding must first obtain consent from the Ministry of Water, Land and Air Protection (WLAP). WLAP also provides local governments with floodplain maps for bylaws and assists with the construction of flood and debris torrent protection works on floodplains and active fans. These regulatory requirements sometimes result in the developer hiring an engineer/geoscientist to prepare risk assessment reports for fan areas. Some of these reports provide useful information such as the predominant hazard type, the frequency of events and consequences.

2.5 Local Governments

Local governments have the mandate to control and direct land use. Floodplain bylaws, development areas and building permits are used to direct appropriate uses of hazardous lands. Risk assessments reports and maps may provide information on predominant hazard type, frequency of events and consequences.

3.0 Where Should Risk Assessment Reports be Required?

In some areas of the province, there are relic paraglacial fans that pose a very low risk to people and property on the fan. These fans have an incised, unobstructed, single channel from the apex to the toe of the fan with channel capacity to convey major floods (one in two hundred year flood discharge) without avulsing or overtopping. Debris flows do not reach the fan under the present day condition. The chance of man made changes 'reactivating' one of these relic fans is very low. On this type of fans watershed risk assessments are not warranted .

However, most active or potentially active fans in the Kootenays are not of this paraglacial type. Most fans do not have a 'bullet-proof' channel, able to convey major floods with attendant timber debris, ice and bedload. Many fans in the region have been constructed, at least partially, by debris flow. In the steep watersheds, road construction and timber removal can renew landslide vigour and transform an inactive relic fan into an active fan. Consequently, risk assessments should be required above most high consequence fans in the region.

Alluvial and/or debris torrent fan risk assessment reports should be required where watershed development activities, such as forest harvesting and mineral exploration, have the potential to significantly increase the risk of damage to people and property on valley bottom fans.

In 1998, WLAP's Kootenay Regional office in Nelson, British Columbia, began compiling an inventory of areas at risk on the valley bottoms. Under contract with WLAP, Klohn-Crippen Consultants Ltd., identified potentially active alluvial and debris torrent fans along the main settlement and travel corridors for the Kootenay Region. Six hundred and fifty fans were identified using air photographs and existing reports. Fifty fans were inspected on the ground by Klohn-Crippen staff to delineate active fan boundaries. The 600 fans which were not field verified were labelled "potentially active alluvial and/or debris flow fans" and were identified as dots on a map. This information was combined with WLAP/s pre-existing active fan inventory.

Since this initial inventory, ongoing field work by WLAP staff and others have resulted in the mapping of approximately seventy additional fan polygons. The Regional District of Central Kootenay (RDCK) has a project in-progress to delineate all geological boundaries for all known potential fans in their region. The fan polygons are being created using air photographs. Consequently, the dominant hazard type and degree of geologic activity is not confirmed on these fans. A project is in progress to make all WLAP and RDCK identified polygons available on a website.

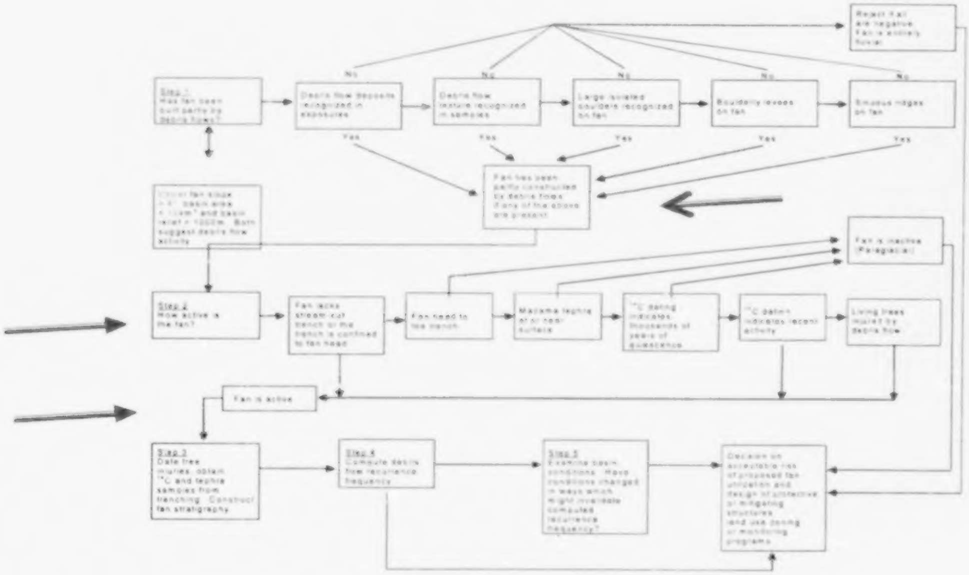
Using these polygons, forest licensees and others can determine where their activities have the potential to increase risk to people and property.

4.0 Determination of Dominant Hazard on The Fans

The assessment procedure will vary depending on the predominant hazard affecting the fan area. The primary concern in watersheds above alluvial fans is a possible increase in the magnitude and frequency of peak flows at the fan apex and below. Consequently, for alluvial fans, the proposed risk assessment procedure focuses on the primary activity that tends to increase the risk of flooding, e.g. the rate of tree removal and road building. Conversely, for areas above a colluvial fan, the primary concern is with landslide initiation and the assessment procedure focuses on the assessment of roads and tree removal on or below steep unstable terrain.

A field review by a qualified professional is usually required to determine the dominant hazard type on a fan. Existing studies and/or mapping mentioned in Section 3.0 may provide this information or be useful to help make the determination. Melton's ruggedness number (Melton 1965), (Jackson et al 1987), (Boyer 1999) can be used as an initial assessment before going to the field (Boyer 2000). Generally, for larger watersheds with larger flatter fans (third order streams and higher) the main concern on the fan is flooding. Smaller steeper watersheds with smaller steeper fans usually have fans that have been partially or mostly constructed from debris flow events. On these fans the main concern is the volume and run-out distances for debris flow events.

Jackson et. al., describe a methodology for the determination of the dominant hazard on a fan (Figure 4). A fan is classified as an alluvial fan if all the answers to questions in Step 1 in Figure 4 are negative. The hazards on an active alluvial fan include overbank flooding and avulsion. Positive answers to any of the questions in Step 1 of the flowchart indicates the fan was at least partly constructed by debris flows.


Reject if all are negative. Fan is entirely fluvial
No
No
No
No
No
Step 1 Has fan been built partly by debris flows?
Debris flow deposits recognized in exposures
Debris flow texture recognized in samples
Large isolated boulders recognized on fan
Bouldery levees on fan
Sinuous ridges on fan
Yes
Yes
Yes
Yes
Yes
Fan has been partly constructed by debris flows if any of the above are present
Other: fan slope > 4°, basin area < 10km² and basin relief > 1000m. Both suggest debris flow activity
Fan is inactive (Paraglacial)
Step 2 How active is the fan?
Fan lacks stream-cut trench or the trench is confined to fan head
Fan head to toe trench
Mazama tephra at or near surface
14C dating indicates thousands of years of quiescence
14C dating indicates recent activity
Living trees injured by debris flow
Fan is active
Step 3 Date tree injuries, obtain 14C and tephra samples from trenching. Construct fan stratigraphy
Step 4 Compute debris flow recurrence frequency
Step 5 Examine basin conditions. Have conditions changed in ways which might invalidate computed recurrence frequency?
Decision on acceptable risk of proposed fan utilization and design of protective or mitigating structures, land use zoning or monitoring programs

Source: Jackson Jr. (1987)

Figure 4: A flow diagram summarizing debris flow hazard evaluation methodology

5.0 Risk Assessment Procedure for Areas above Alluvial Fans

5.1 Map Sub-basins and H60 Lines

The first step is to delineate watershed boundaries above the apex of the fan on a suitably scaled map (usually between 1:10,000 and 1:20,000). Sub-basin drainage boundaries and H60 line(s) are then mapped (Watershed Assessment Guidebook 1999). Watershed and sub-basin Equivalent Clearcut Areas (ECA) are calculated using procedure described in Watershed Assessment Guidebook for existing condition and proposed development scenario.

5.2 Hazard Rating

A hazard rating is then assigned for the watershed and sub-basins using Table 1. The hazard ratings are based on ECA calculations. Several other factors, such as road density and the spatial distribution of disturbances, obviously have effects on the runoff hydrograph. However, it is assumed that these effects are sufficiently accounted for in the ECA calculation. (With the continued advances in computing power, digital terrain mapping and remote sensing one will soon be able to model development proposals on virtual representations of watersheds Whittaker 2000) and routinely make decisions on risk. Until then, using ECA values is judged to be an adequate representation of the level of disturbance in the watershed).
Hazard ratings can be assigned using more detailed and sophisticated methods. Threshold ECA values presented in Table 1 were determined through a review of paired watershed studies and guideline documents used in southern BC.

ECA Level	Avulsion Hazard Rating
< 15 %	Low
15 to 25 %	Medium
> 25%	High

Table 1: Avulsion Hazard Rating

5.3 Consequence Rating

Consequence ratings are assigned using Table 2. The table assigns a consequence rating based on housing density. This approach was taken for several reasons:

A. Some local governments have established rural landuse bylaws that set lot sizes *and building densities. These are an expression of local desire for housing density* and should remain static for the mid to long term.

B. As mentioned in Section 3.0, WLAP has mapped many of the populated fans in the region. This, along with the administration of floodplain management programs (subdivision approvals by the province and floodplain bylaws by the local governments), will tend to keep lot sizes at existing levels in high hazard areas.

C. Fan areas have been identified for local governments, so that in areas that have building bylaws, building inspectors do not approve new building construction without due consideration for the flood and/or debris flow hazards.

D. The majority of the local governments have bylaws that restrict the number of principal dwellings to one per lot.

E. Highways, secondary roads, railways and utilities are common features on the fans in the valley bottoms.

If a hospital, school or other such important infrastructure exists on a fan, then the consequence rating should automatically be raised to high.

Density of Buildings	Consequence Rating
Rural agriculture: 8 hectare min. lot size	Low
Rural residential: 2 hectare min. lot size	Moderate
Community: lot sizes less than 2 hectares	High

Table 2: Consequence Rating

5.4 Risk Rating

Hazards and consequences are combined to establish a risk rating using Table 3. If the risk rating for the entire watershed and all sub-basins are low then the development proposal should be allowed to proceed subject to normal Forest Practice Code requirements.

If the risk rating for the entire watershed is low but one or more of the sub-basins have a high hazard rating then an assessment should be completed for the mainstream channel below the confluence of the sub-basin(s). The assessment is undertaken, by a stream channel specialist, to determine if increased peak flows emerging from the sub-basin(s) will increase movement of bedload and woody debris and/or increase bank erosion in the main channel. If main channel disturbance is anticipated, the professional should then assess the risk of the destabilizing effect reaching the fan and increasing the hazard on the fan. If the increases in peak flows from the sub-basin(s) will increase the hazard on the fan then the ECA in the sub-basin(s) should be reduced to 20% or less depending on the advice of the hydrologist and stream channel specialist.

If the risk rating for the watershed at the apex of the fan is moderate or high, development should be deferred or modified or an avulsion risk assessment should be undertaken.

HAZARD	**CONSEQUENCE**		
	High	**Medium**	**Low**
High	**VH**	**H**	**M**
Medium	**H**	**M**	**L**
Low	**M**	**L**	**L**

Table 3: Risk Rating

5.4.1 Fan Avulsion Risk Assessment

The fan avulsion risk assessment procedure is built upon work by (Chatwin 1999). A hazard rating is derived using a stream power index and a sensitivity rating for the fan. The stream power index is obtained from Table 4. The stream power index varies according to the channel gradient and the cross section. For example, the stream power index for a 2m deep and 2m wide channel on a 40 % grade is Very High. A 1m deep and 4m wide channel on a slope less than 8 % has a Moderate index.

The sensitivity of the fan to avulsion hazard is determined by a fluvial specialists using the following criteria (Chatwin 1999):

- Degree of incision of channel(s)
- Number of active channels
- Amount of woody debris
- Amount of stored sediment

CHANNEL CROSS-SECTIONAL AREA (M2)

CHANNEL GRADIENT (%)	< 0.5	0.5 – 1.0	1.0 – 2.0	2.0 – 4.0	4.0 – 8.0
> 40	**L**	**M**	**M**	**H**	**VH**
20 – 40	**VL**	**L**	**M**	**H**	**H**
8 – 20	**VL**	**L**	**L**	**M**	**H**
< 8	**VL**	**VL**	**L**	**L**	**M**

Table 4: Rating of Stream Channel Power

Table 5 is used to establish an avulsion hazard rating. The avulsion hazard rating is combined with the consequence rating to establish a risk rating for avulsion hazard on the fan (Table 3). Using this approach, a fan with more than two channels, with channel incision less than one meter, large amounts of large woody debris and large amounts of stored sediment in the channel, will have a High sensitivity to destabilization (Chatwin 1999).

Sensitivity of the Fan

Stream Power Index	**Low**	**Moderate**	**High**
Very Low	**VL**	**L**	**L**
Low	**VL**	**L**	**M**
Moderate	**L**	**M**	**H**
High	**L**	**H**	**VH**

Table 5: Determining Avulsion Hazard

If the risk of avulsion is low, no further analysis is required. If the risk is determined to be moderate, high or very high, the development proposal is scaled back further or alternately, a more detailed risk assessment can be undertaken focusing on the channel capacity calculations.

5.4.2 Channel Capacity Risk Assessment

A numeric model (HEC-RAS) is used to estimate water levels in the channel(s) associated with the increased discharges anticipated due to the development proposal. Inputs to the model include channel cross sections, channel slope, channel roughness and stream discharge (US Army Corps of Engineers, 1998). The HEC-RAS model, like all models, must be used with caution. The model operates on the assumption of a fixed bed geometry. During major floods, steep mountain streams usually experience large scale bedload movement, channel shifting and log jams. The fixed bed model does not take these conditions into account. However, because the objective is to assess future relative changes, the fixed bed model is considered appropriate for use in this application.

A flood discharge with a recurrence interval of one in two hundred years (Q_{200}) is used as a basis for floodplain development control in the province and is considered an appropriate flood magnitude for this assessment procedure. Once an estimate is obtained for the Q_{200} (usually the annual maximum daily discharge) it is increased by the percentage increase in ECA associated with the development proposal. For example, if the estimated Q_{200} for the predevelopment period is $20m^3/s$ and the proposed development plan is expected to increase the ECA to 25 % then the discharge used in the model would be $25m^3/s$. It is recognized that there is a risk of other processes, such as, a rapid breach of a dam or channel blockage or ice jamming causing flood discharges and water levels higher than a predicted Q_{200} (Jakob and Jordan 2001). However, these occurrences are infrequent and the objective is to examine relative risk.

Tables 7 and 2 are used to determine the hazard and risk ratings. If the risk is low no further analysis is required. If the risk is raised to the moderate or higher category, then the development proposal should be deferred or downsized.

Channel Clearance	Hazard Rating
2m or more to top of bank	**Low**
1 to 2m to top of bank	**Moderate**
Less than 1m to top of bank	**High**

Table 7: Channel Capcity Hazard Rating

6.0 Risk Assessment Procedure for Areas above Debris Flow Fans

This section describes a procedure for completing a watershed scale risk assessment when field indicators (Figure 4), existing reports and/or professional opinion indicate that the dominant hazard on the fan is debris flow. The procedure generally follows the approach used by Boyer et al (2000) in the Perry Ridge Risk Assessment Report (Section 2.3).

In areas with obvious high risks, consideration should be given to having the assessment completed by an expert panel. Debris flow hazards are difficult to quantify. Consequently, most assessments reports depend heavily on professional judgement. A panel of experts can provide a concensual risk assessment, which is more reliable than one prepared by a single report. Ideally, the team would consist of a geomorphologist, a forest hydrologist, and a forester. In less sensitive/less contentious watersheds with lower consequences, the assessment can be undertaken by a qualified professional. A peer review of the report by an independent expert will increase the confidence in the risk assessment.

The assessors should become familiar with the terrain where development is proposed and where previous activity has occurred in the watershed by a helicopter overview flight and/or a few days in the field. The assessor should also discuss and/or go in the field with authors of supporting documents, such as, Terrain Stability Field Assessment reports (TSFA) and channel assessments .

6.1 Event Types

The first step is to identify the types of geological hazards present in the watershed that could have an affect on the fan. These usually include debris flows (including debris torrents and debris floods) and snow avalanches. On rare occasions, fans are flooded by the mass movement of snow and slush during a rapid warming event in winter.

6.2 Assessing Existing Hazards

All available information, a helicopter overview flight(s) and a few days in the field (depending on the size and sensitivity of the watershed) are used to identify landslide and snow avalanche sensitive terrain in the watershed. A stream channel survey procedure developed for the Perry Ridge study, by Steve Chatwin, is used to assist in the assessment of gully and head water stream channels (Chatwin 1999). Existing roads, trails, cutblocks and/or mining disturbances (tailing ponds, waste piles, old structures such as dams, etc.) on or above steep unstable terrain must be included in the assessment.

6.3 Fan Hazard Ratings For Existing Condition

Once unstable and/or potentially unstable areas are identified, linkages or connectiveness between these sites and the fan are assessed. This assessment is undertaken using professional judgement and all existing information including stream channel inventory and rating information (Chatwin, 1999). Additional field reviews may be warranted for high risk sites. Each event type is assigned a hazard rating using the following three class rating system: Low, Moderate and High.

6.4 Rating Hazards with Consideration of Development Effects

Once the existing hazards are rated, the influence of the proposed development on these ratings are assessed.

Roads, trails, cutblocks or other disturbances proposed on or above identified and suspected unstable terrain must be assessed. These include hazards associated with flat over steep scenarios (Jordan, 2001). Each site should be viewed in the field with special attention paid to potential micro drainage problems (Greene, 2001). When timber harvesting is proposed on or above steep unstable terrain, micro drainages should be mapped and verified in the field to assess the risk of landslide initiation by drainage concentration or diversion. ECAs should be calculated to assess the risk of localized peak flow increases causing landslide initiation.

If there are proposed clearcut areas in potential snow avalanche start zones and the assessment team or qualified professional does not have the experience with the detection and prediction of snow avalanches, a specialists should be retained to assess snow avalanche hazards.

Stream channel surveys (Chatwin, 1999) is used to assess the linkages associated with proposed development.

Hazard assessment should consider all possible spacial and temporal effects of the proposed development. Disturbance effects can be long lasting and require a continued site commitment until hydrological recovery and/or road deactivation works take hold. On or near unstable terrain, there is a certain degree of risk of a landslide or erosion event whenever a road segment is left through a winter with open ditches and culverts. Road cutbanks failures and culvert blockage can go undetected and can occur during spring break-up when men and equipment cannot access the site(s).

7.0 Risk Analysis

Hazard ratings are combined with consequence ratings (Table 2) for the fan using Table 3.

Areas where proposed development pose a high risk should be rejected from the plan. Areas generating a moderate risk should also be deferred unless a combination of project modifications and/or special best management practices can mitigate the hazard effects from the development proposal. i.e. move the risk rating for the project into the low category. Proposed best management practises recommended and the company proposing them should have a proven track record.

8.0 Conclusion

A procedure for assessing increased risk on alluvial and colluvial fans associated with resource development proposals is presented.

References

Boyer, D. 1999. Debris Flow Hazards on Alluvial Fans: Kootenay Region, Southeast BC. Confronting Uncertainity: Managing Change in Water Resources and the Environment, Richmond, BC p.325

Chatwin, S. 1999. Perry Ridge Stream Channel Survey. Prepared for Ministry of Forests, Arrow Forest District, Castlegar, BC

Forest Practices Code of BC, 1999. Interior Watershed Assessment Procedure Guidebook.

Green, K. and Halleram, W. 2001. Drainage Plans, A Comprehensive Planning Tool in High Risk Terrain. Terrain Stability and Forest Management for Interior of BC Conference. Nelson, BC.

Jakob, M. and Jordan, P. 2001. Design Flood Estimates in Mountain Streams – The Need for a Geomorphic Approach. Com. J. Civ. Eng. Vol 28. pgs 425 – 439.

Jackson, L.E.Jr., R. A., Kostaschuk, G.M. McDonald. 1987. Identification of Debris Flow Hazard on Alluvial Fans in the Canadian Rocky Mountains. Geological Society of America, Vol. VII pg. 115-124.

Jordan, P. 2001. Landslide Frequencies & Terrain Attributes in Arrow & Kootenay Lake Forest Districts.

Klohn-Crippen, 1998. Terrain Stability Inventory Alluvial And Debris Torrent Fans, Kootenay Region. Report prepared for

Melton, M.A. 1965. The Geomorphic and Paleoclimatic Significance of Alluvial Deposits in Southern Arizona. Journal of Geology. V.73, p.1-38

US Army Corp. of Engineers 1998. HEC-RAS River Analysis System User's Manual Version 2.2

Whitaker, A. 2000. Modeling of Peak Flow Change Using the DHSVM Model. Watershed Assessment in the Southern Interior of BC Symposium, Penticton, BC 2000.

Appendix 6.0 - Draft Sustainability Vision and Principles

The following draft Sustainability Vision and Principles were approved by Open Cabinet in May 2002 for initial application to selected pilot projects and for public consultation.

Draft Sustainability Vision
"To optimize economic development of the province's natural resources, protect ecosystem integrity and enhance community well-being for all British Columbians, now and in the future."

Draft Sustainability Principles
1. Accountability – Setting performance-based standards and indicators, implementing mechanisms for compliance, auditing and reporting on an effective enforcement regime, and reporting on progress towards sustainable resource management.
2. Certainty – Making timely and clear resource management decisions within a predictable and understandable regulatory framework.
3. Competitiveness – Ensuring that British Columbia remains internationally competitive by removing barriers to investment and promoting open trade.
4. Continual improvement – Learning from the past and looking for new and improved approaches to resource management.
5. Efficiency – Maximizing the net benefits arising from the allocation, development, and use of natural resources.
6. Innovation – Encouraging innovative approaches, technologies and skills to ensure the wise and efficient use of natural resources.
7. Integration – Ensuring that resource management decisions integrate economic, environmental, and social considerations for the benefit of present and future generations.
8. Science-based decision making – Making decisions that are informed by science-based information and risk assessment.
9. Shared responsibility – Encouraging co-operation between First Nations; federal, provincial, and local governments; and industry and non-governmental organizations in developing and implementing resource management policies.
10. Transparency – Establishing open and understandable decision-making processes including consulting with key interests prior to making decisions; public release of monitoring and compliance records, and tracking sustainability indicators.

APPENDIX 7.0 – Connectivity

Introduction

Connectivity is the ecological term that describes connections among habitats, species, communities, and ecological processes, enabling the flow of energy, nutrients, water, natural disturbances, and organisms and their genes at many spatial and temporal scales (Noss and Harris,1989; Noss,1991). Connectivity corridors support biodiversity by: maintaining opportunities for genetic exchange between populations (Merriam,1991): allowing for gradual shifts in the distribution of species and ecosystems in the event of catastrophic events; and enhancing the management of rare habitats for red and blue-listed species, other regionally significant species, and rare ecosystems that are under-represented in protected areas. There is significant evidence that connectivity corridors aid the continuity and stability of populations (including plants, small and large mammals, birds and other organisms). The loss of connectivity, often referred to as fragmentation, is considered by some to be the greatest threat to natural biodiversity (Harris,1984; Wilcox and Murphy,1985; Wilcove et al., 1986; Noss,1991). Fragmentation of habitat results in reduced habitat quality leading to isolated populations, reduced resilience and extirpations (Spies et al.,1994). Although there are challenges to carrying out studies of connectivity at a landscape level, the benefits of landscape corridors such as riparian areas are well documented. It is also possible that connectivity corridors may play a role in a changing climate by allowing plants and animals to make landscape-scale movements along the changing climate gradient to avoid adverse environments (Hobbs and Hopkins,1991).

Connectivity is recognized as an appropriate indicator to measure how effectively a particular land use regime contributes to the maintenance of biodiversity and opportunities for the movement of species and genetic material over time and across landscapes. Connectivity can be achieved through a combination of land-use designations, including the designation of Protected Areas, special management areas, and the establishment of conservation-oriented management objectives in the appropriate land units.

Understanding connectivity requires viewing ecological systems over larger areas and longer time frames than most people are accustomed to - tens of thousands of square kilometres and many decades or even centuries. Over such scales, species' distribution and abundance are not static but fluctuate with changing climatic and ecological conditions. Local populations may become temporarily extirpated but may be recolonized if connectivity among populations exists. In addition to maintaining long-term movement potential, connectivity permits gene flow that ensures genetic variability is maintained. Genetic variability, although probably not as important as maintaining meta-population dynamics, may be important with respect to reducing the negative effects of inbreeding and maintaining the ability of species to evolve and adapt to local conditions (B. McLellan, 2002 pers. comm.).

Benefits of Connectivity

Connectivity or habitat linkages serve to:

- mitigate the negative impact of ecosystem and species fragmentation by providing contiguous movement and dispersal corridors between suitable habitats

- facilitate migration between seasonal habitats through provision of certain requirements such as security cover
- maintain genetic diversity within a population by facilitating movement and genetic exchange between populations
- allow organisms to establish in new areas or previously occupied areas
- aid the continuity and stability of populations of plants, small and large mammals, birds and other organisms
- facilitate the flow of energy, nutrients, water, natural disturbances, and organisms and their genes at many spatial and temporal scales
- mitigate adverse impacts to natural biodiversity
- reduce the threat of decreased habitat effectiveness which can precipitate isolation of populations, lower reproduction potential, negatively affect poor recruitment to unoccupied habitats, and reduce resilience potentially resulting in extirpations

Risks to Connectivity

The risk to successful fulfilment of connectivity is high if:

- representation is not achieved by Biogeoclimatic Ecosystem Classification (BEC)
- habitats are not maintained in a proper functioning condition
- access planning does not recognize the sensitivity of wildlife to the effects of cumulative industrial and recreational access activities
- compliance and enforcement is low
- barriers which adversely affect gene flow are not addressed

An example of risk within the SRMMP relates to the Highway 3 corridor, comprised of the highway, railway, towns and associated developments, that collectively create a fracture or physical barrier precipitating movement limitations which could subsequently reduce genetic variability among grizzly bear populations located North and South of the highway (M. Proctor 2002). Although many species, such as deer and elk, can live for months in the Highway 3 corridor and successfully move across this area, grizzly bears are less likely to do so. Although they are found in the corridor, they are more likely to become attracted to garbage, fruit trees, composts, or pet foods, and, because bears are potentially hazardous to people, they are frequently removed. DNA from most grizzly bears collected north of the Highway 3 corridor can be clearly differentiated from DNA collected from bears on the south side, suggesting that the Highway corridor has begun to fracture the population (B. McLellan, 2002 pers. comm.). To ensure the viability of populations of bears and other species on either side of the Highway 3 corridor, maintaining connectivity is clearly a principle wildlife conservation goal.

If connectivity is not maintained, the risk to individual species like grizzly bear, which have a low tolerance to human activity or are less mobile with respect to their ability to disperse, locate and utilize suitable habitats, can be high.

Connectivity in a Forest Matrix Context

As opposed to applying a conventional linear or corridor approach to connectivity, the forest matrix concept involves the integration of access planning with mature and old representation, specific habitat identification and zoning and the development of related habitat conservation regimes across the landscape. This concept was applied to the landscapes within the Southern Rocky Mountain Management Plan (SRMMP).

Essentially, the forest matrix concept involves the spatial identification of:

- core grizzly bear security zones,
- old growth management zones and mature forest zones (where specified by the Higher Level Plan),
- high to moderate ranked avalanche tracks,
- riparian zones,
- ungulate winter range, and
- inoperable forested and non-forested components of the forest harvesting land base.

Appropriate conservation and access management objectives are then specified to ensure proper functioning condition and optimum habitat effectiveness.

From a strategic wildlife conservation perspective, connectivity is obviously important. The challenge confronting land use planners using the forest matrix approach is to determine:

- an ecologically effective means of achieving proper functioning condition and habitat effectiveness through the maintenance of connectivity,
- a realistic and practical operational method of implementing and achieving connectivity objectives at a landscape level, and
- an effective and balanced industrial, public and commercial recreation access plan that sustains functional connectivity.

Connectivity in the SRMMP Area

Within the SRMMP area, a decision was made to digress from the KBLUP-IS linear connectivity concept and address the development and implementation of connectivity in a forest matrix context. The logic for achieving the goals of connectivity and habitat effectiveness through this approach was based on the opinion that this concept would:

- be more ecologically appropriate
- be based on complementary science and local knowledge
- address the entire landscape as opposed to a singular corridor

Anecdotal and scientifically-based information, required to develop and support this concept, was acquired through separate public and research connectivity workshops which, respectively generated pertinent input from commercial guides, recreationalists, hunters, local experts, scientists, foresters and biologists

Information was gathered related to:

- the identification (through anecdotal and standardized inventories) of ungulate and wide ranging carnivore locations and distribution by season
- the identification of key daily and seasonal movement routes
- determining what constitutes connectivity
- determining how connectivity can be quantified
- the identification of discrete habitats and core security areas that are required to support connectivity
- determining how the identified habitats could be managed over time

- determining, from an ecosystem based perspective, that the connectivity line work and concept is appropriate and scientifically defensible
- determining that the support inventory is comprehensive
- developing management direction which would ensure that functional connectivity would be sustained and would realistically contribute to wildlife conservation management
- the operational practicality of achieving connectivity through the forest matrix concept
- identification of connectivity gaps
- the development of best management objectives and stewardship practices for each identified habitat unit
- developing a means of mitigating the influence of identified barriers to movement

With the assistance of wildlife inventory, habitat inventory, and the scientific and local knowledge and data generated from these sessions, the habitat components essential to connectivity were mapped, best management practices were developed, and stewardship objectives were designed and subsequently reflected in the Southern Rocky Mountain Management Plan document.

References

Harris, L.D. 1984. The fragmented forest: island biogeography theory and the preservation of biotic diversity. University of Chicago Press. Chicago, Ill. 211 pp.

Hobbs, R.J., and A.J.M. Hopkins. 1991. The role of conservation corridors in a changing climate. Pages 281-290 in D.A. Saunders and R.J. Hobbs (eds.). Nature conservation 2: the role of corridors. Surrey Beatty and Sons, NSW, Australia, 442 pp.

Merriam, G. 1991. Are corridors necessary for the movement of biota? Pages 406-407 in D.A. Saunders and R.J. Hobbs (eds.). Nature conservation 2: the role of corridors. Surrey Beattie and Sons, NSW, Australia, 442 pp.

McLellan, B.N. 2002. Personal Communication.

Noss, R.F., and L.D. Harris. 1989. Habitat connectivity and the conservation of biological diversity: Florida as a case history. Pages 131-135 in Forestry of the Frontier Convention of the Society of American Foresters, Spokane, Wash. 444 pp.

Noss, R.F. 1991. Landscape connectivity: different functions at different scales. Pages 27-39 in W.E. Hudson (ed). Landscape linkages and biodiversity. Defenders of Wildlife, Washington, D.C. 196 pp.

Proctor, M. F.,2002. Population fragmentation and connectivity of grizzly bears across BC Highway 3 in the Purcell Mountains of southeastern British Columbia, Canada.

Spies, T.A., W.J. Ripple, and G.A. Bradshaw. 1994 Dynamics and pattern of a managed coniferous forest landscape in Oregon. Ecological Applications 4(3): 555-568

Wilcove, D.S., C.H. McLennan, and A.P. Dobson. 1986. Habitat fragmentation in the temperate zone. Pages 237-256 in M.E. Soule (ed). Conservation biology: the science of scarcity and diversity. Sinauer Associates, Sunderland, Mass.

Wilcox, B.A., and D.D. Murphy. 1985. Conservation strategy: the effects of fragmentation on extinction. American Naturalist 125: 879-887.

SOUTHERN ROCKY MOUNTAIN MANAGEMENT PLAN
APPENDIX 8.0

A SYNOPSIS OF THE EAST KOOTENAY UNGULATE WINTER RANGE CAPABILITY MAPPING, MANAGEMENT OBJECTIVES AND BEST MANAGEMENT PRACTICES

DRAFT

Prepared for the
Ministry of Sustainable Resource Management
and the
Ministry of Water, Land and Air Protection
by the
East Kootenay
Ungulate Winter Range
Committee

May 1, 2003

Abstract

The East Kootenay ungulate winter range mapping and guideline development process was established to facilitate the requirements expressed in section 8 of the Higher Level Plan Order (HLP) and to address the operational planning regulation requirements of the Forest Practices Code (FPC). The respective HLP and the FPC direction provides the mandate for;

- the identification of ungulate winter range
- the management of ungulate winter range

Other relevant issues which precipitated this initiative involved questions relating to:

- the accuracy of the Kootenay Boundary Land Use Plan – Implementation Strategy (KBLUP-IS) ungulate winter range area
- the acceptance, from a scientific perspective, of KBLUP-IS forest cover guidelines
- the KBLUP-IS management objectives operational feasibility and potential adverse economic impact
- the continued concern about the diminishing abundance and quality of forage
- the recognition that forage quantity and suitability is a principle limiting factor affecting wintering ungulate populations
- the current separation of Fire Maintained Ecosystem Restoration and Ungulate Winter Range management regimes

The East Kootenay ungulate winter range mapping and guideline development process also strived to meet the overall intent and guiding principles for the confirmation and establishment of ungulate winter range and the administrative process for mapping which was described in the May 2000, Memorandum of Understanding between the Ministry of Forests and the former Ministry of Environment and Parks. The work of the East Kootenay Ungulate Winter Range Committee (EKUWRC) also linked to the legal requirements expressed in the new Forest and Range Practices Act, 2002, which replaces the Forest Practices Code of British Columbia Act.

Ungulate winter range (UWR) management objectives and best management practices (BMP) were developed to address the winter habitat requirements of all resident ungulate species in the East Kootenay, excluding mountain caribou, which are currently being dealt with through the work of the Kootenay Regional Caribou Committee and Recovery Action Groups.

Executive Summary

The East Kootenay Ungulate Winter Range maps were developed in consideration of the provincial standards and procedures for rating ecosystems which determine ungulate winter range habitat capability and suitability.

The British Columbia Wildlife Habitat Rating Standards document (May 1999, Version 2.0) defines capability and suitability ratings as, " the relative importance of various mapped ecological units to wildlife populations for the purpose of making land management decisions. Capability is defined as the ability of the habitat, under optimal natural (seral) conditions for a species to provide its life requisites, irrespective of the current condition of the habitat. Suitability is the ability of the habitat, in its current condition, to provide the life requisites of a species".

With respect to defining Ungulate Winter Range (UWR) the East Kootenay Ungulate Winter Range Committee (EKUWRC) determined early in the process not to differentiate between UWR and Fire Maintained Ecosystems but to refer to the entire area identified with winter capability, regardless of it's position within a Natural Disturbance Type (NDT) as Ungulate Winter Range. Although this decision may create confusion around the jurisdictional issues relevant to implementation, enforcement and monitoring responsibilities, the EKUWRC, to facilitate ease of interpretation and application, recommends and supports this integrated approach.

To maintain further continuity, the EKUWRC, with some alterations to emphasize variations in moisture regimes, also adopted the habitat type definition format used in the Fire Maintained Ecosystem Management (NDT4) objective setting process (Appendix A, Table A).

The EKUWRC also decided to recognize the significance of forest cover but would emphasize forage productivity as a habitat management priority. The EKUWRC also determined that the capability maps and ungulate winter habitat management objectives would be developed through rigorous scientific analysis of ungulate winter requirements and would be expressed in an ecosystem based context as opposed to a species driven process.

This ecosystem based objective, however, was not always achievable. For example, if the Predictive Ecosystem Model (PEM) system did not fully account for local climatic variations it had to be supplemented with the 1979 Biophysical Classification for Wildlife Capability, topographic and elevation rules.

With respect to the development of forage and cover objectives where specific research supported data was not always available, conservative negotiated determinations were made. Areas where further research is required were noted.

Table of Contents

Abstract 2
Executive summary 3
Table of Contents 4

1. East Kootenay Ungulate Winter Range (UWR) Committee 5
  1.1 Participants

2. Introduction 6
  2.1 Ungulate Winter Range
  2.2 Goal
  2.3 Intent
  2.4 Issues
  2.5 Objectives
  2.6 Measures of Success

3. East Kootenay UWR Committee Objectives 7

4. Pertinent Legislation 8

5. Licensee Requirements 8

6. Guideline and Ungulate Capability Mapping Methodology 8
  6.1 Basis for the mapping and Guidelines: Best Available Science
  6.2 Ecosystem and Capability Mapping
  6.3 Objective and Best Management Practices Development
    6.3.1 Best Management Practices
    6.3.2 Management Objectives

7. Access Planning 10

8. Information Gaps and Future Work Requirements 11
  8.1 Biological Information
  8.2 PEM mapping
  8.3 Developing capability ratings using PEM mapping
  8.4 Effectiveness Monitoring
  8.5 Problem Forest Types

References 13

Appendix A 15
Appendix B 22
Appendix C 26

1. East Kootenay Ungulate Winter Range Committee

1.1 Participants:

- Robert Neil (UWR committee chairperson) – planning biologist – Ministry of Sustainable Resource Management (MSRM)
- Dr. Kari Stuart-Smith – wildlife ecologist – Tembec Forest Industries
- Dr. Daryl Hebert – consulting wildlife biologist
- Oliver Thomae – consulting forester – Galloway Lumber Company Ltd.
- Martin Jalkotzy- consulting wildlife biologist
- Peter Holmes – ecosystem biologist – Ministry of Water, Land and Air Protection (WLAP)
- Al Neal – planning officer – Ministry of Forests - (MOF)
- John Bergenske – East Kootenay Environmental Society (EKES) and Rocky Mountain Trench Natural Resources Society
- Peter Davidson – ecosystem biologist – Ministry of Water, Land and Air Protection (WLAP) and Ktunaxa Kinbasket Tribal Council – (KKTC)
- Maureen Ketchison – consulting PEM contractor – JMJ Holdings

2.Introduction

2.1 Ungulate Winter Range:

Winter range is commonly described as the area that provides the resources required by ungulates during the winter. Although a number of factors, such as disease, displacement, predation and over harvesting can affect the viability of an ungulate population, the extent and suitability of their winter habitat is considered the ultimate limiting factor. Good quality winter range is therefore essential to the condition, survival and productivity of ungulate species and populations.

During the winter season ungulates must contend with the worst environmental conditions while consuming the poorest quality food. This has direct implications on an ungulates physical condition which is essentially dictated by their ability to maintain a positive net energy balance. If energy losses, which are influenced by cold temperatures, deep or crusted snow and inadequate or poor quality forage, exceed energy gains over an extended period, the condition of an animal will deteriorate and, if prolonged, the animal will die (Armleder, Dawson and Thomson, 1986). Consequently, to ensure over-wintering ungulates are provided with the best environment for survival, it is prudent to exercise the application of precautionary access management and forage conservation principles on identified ungulate winter range sites. From an ungulate winter range conservation perspective, providing direction that supports enhancing and sustaining forage availability and suitability characteristics, while providing for adequate cover has been the principle objective of the East Kootenay Ungulate Winter Range Committee (EKUWRC).

2.2 Ungulate Winter Range Management Goal

- To Conserve and Enhance Ungulate Winter Range

2.3 Ungulate Winter Range Management Intent:

- Maintain ungulate winter forage and cover in a condition that meets the life requisites of wintering ungulates.
- Maintain ungulates across their natural range.
- Enhance habitat effectiveness by: minimizing barriers to movement; maintaining current access management legislation; and, managing habitat deployment.
- Enhance suitability and forage productivity of ungulate winter range.
- Employ current biological and ecological science for the development and perpetuation of ungulate winter habitat structure, suitability and functional management requirements.
- Manage ungulate winter range on an ecological basis as opposed to a species-driven process.
- Apply stand level management prescriptions that are consistent with natural landscape characteristics.
- Manage public and commercial recreation access in order to maintain ungulate winter range habitat effectiveness.
- Develop and implement strategies required to manage industrial access in order to maintain ungulate winter range habitat effectiveness.

2.4 Ungulate Winter Range Issues:

- Forage availability and suitability, for wintering ungulates, which can be limited by:
  - inadequate forage carry over
  - domestic livestock and wild ungulate competition for available forage

    - forest in-growth
    - noxious and invasive weeds
    - exclusion of fire from fire maintained and fire induced ecosystems
    - land alienation and;
    - imbalanced forest harvest regimes on ungulate winter range
- Ungulate winter range use, which can be limited by:
    - barriers (fences, reservoirs, roads)
    - disturbance related to commercial and public motorized recreation activity on winter ranges and;
    - industrial resource development and access use during seasonal periods when ungulate energy levels are lowest.
- Incomplete research and inventory related to the determination of wintering populations, distribution and habitat selection.
- Availability of suitable cover.
- Balancing cover and forage requirements.
- Balancing ungulate winter range carrying capacity and ungulate populations.

2.5 Ungulate Winter Range Legal Management Objectives:

- Within the mapped ungulate winter range, the landscape-level cover and forage targets will be applied by Landscape Unit by habitat type as expressed in Appendix A, Table B.
- Within ungulate winter range as mapped, the stand/site-level management objectives and stocking standard targets will be applied by habitat type as expressed in Appendix A, Table C.

2.6 Ungulate Winter Range Measures of Success:

- Suitable winter range forage and cover habitat attribute targets are achieved and sustained.
- Forage productivity is enhanced.
- The opportunity to access available forage is optimized.
- The managed ungulate winter range configuration resembles the characteristics of a landscape shaped by natural disturbance events.
- The reduction of unnatural movement and displacement of wildlife from highly suitable winter habitat is evident.
- The shelter and forage value of mature and old growth forests within identified ungulate winter ranges is achieved.
- The restoration of unsuitable ungulate winter habitat is achieved.

3. East Kootenay Ungulate Winter Range Committee Objectives

The East Kootenay Ungulate Winter Range Committee (EKUWRC) was assembled in 2001 with the express purpose of determining the accuracy of the KBLUP-IS winter range maps and the applicability of the management guidelines. In this regard, the EKUWRC developed a terms-of-reference to outline the principles and process that would be used to refine ungulate winter range mapping and management guidelines (Appendix B).

The quality and quantity of winter range is the most important limiting factor regulating carrying capacity and accordingly is significant with respect to ungulate species and population management. Consequently, from an ungulate winter range conservation perspective, providing direction that supports enhancing and sustaining forage availability and suitability characteristics has been the principle stewardship objective of the EKUWRC.

4. Pertinent Legislation

Government is currently replacing components of the 1995 Forest Practices Code with a new Results Based Code. Part of the new code framework, relevant to ungulate winter range, is intended to express a series of land use objectives that specify habitat targets. The intent is to ensure that strategic forest and forage management objectives are measurable, applicable and enforceable. In response to legislative requirements and government direction, the East Kootenay Ungulate Winter Range Committee has completed the development of ungulate winter range capability maps and habitat type management objectives which have the potential to fulfill the legal requirements expressed in the Higher Level Plan Order (HLP) and the pertinent regulatory sections of the Forest Practices Code of B.C.

5. Licensee Requirements

The ungulate winter range management objective, reflected in the Results Based Code discussion paper, is described as, "Forest cover and forage will be conserved over an area necessary for winter survival of ungulate species recognizing regional variance in the ecology of ungulate species." The discussion paper also says that "ungulate winter range will be spatially defined and objectives set by the Ministry of Water, Land and Air Protection (WLAP). A licensee will have to demonstrate to the satisfaction of the District Manager that the location and intensity of forest development units in a Resource Development Plan will achieve objectives for ungulate winter range. If a stand level result is required by the objectives or general wildlife measures, a licensee's operations will be required to deliver that result."

6. Guideline and Ungulate Capability Mapping Methodology

The East Kootenay Ungulate Winter Range Committee elected to develop the objectives and best management practices recommendations in an ecosystem based context as opposed to a species driven process. The East Kootenay process involved: a compilation and summary of all research on ungulates in the East Kootenay and similar ecosystems, ecosystem mapping, development of capability and suitability ratings for the ecosystem mapping and guideline development.

6.1 Support Basis for Mapping and Guideline Development: Best Available Science

Three main projects were conducted in order to ensure the best possible scientific information was available as a basis for the mapping and guidelines. This information was used throughout the process.

1. An extensive literature review was commissioned to summarize research into habitat use and preferences for East Kootenay ungulates (excluding caribou), incorporating the latest telemetry studies available that represent East Kootenay ecosystems (Jalkotzy 2002). As part of this review the ecology of major forage and browse plant species was expressed.

2. Co-ordinates of winter ungulate sightings from approximately 25 years of winter inventories were plotted for each ungulate species (Jalkotzy 2002, East Kootenay Ungulate Aerial Survey Data: 1978-1998). It was hoped that this would help to verify winter range extent, patterns of use as the winter

season progresses, and any displacement pattern that may emerge due to in-growth or land use changes.

3. Recognizing there was no information on moose habitat use in the East Kootenay, a moose study was initiated by Tembec Industries Inc., funded by Forest Renewal BC, and implemented by Aurora Wildlife Services. Goals of this study were to clarify winter home range and habitat preferences in three representative East Kootenay areas; the Flathead valley, upper Elk valley and Spillimacheen valley northwest of Invermere. The results, in combination with the results from other studies of moose, were used to help define the extent of moose winter range and their use of forage and cover. Results from the first year of this study are summarized in Poole and Stuart-Smith (2002).

6.2 Ecosystem and Capability Mapping

1. A predictive ecosystem mapping project was commissioned in 2001 which engaged JMJ Holdings of Nelson B.C. to predict site series locations for each biogeoclimatic variant of the East Kootenay. This was achieved through the use of GIS analysis of landforms and computer algorithms, Terrestrial Ecosystem Mapping results, forest cover, satellite imagery and terrain information (Ketchison 2002, East Kootenay Predictive Ecosystem Mapping). The mapping was complicated by the fact that in 2001, the Regional Ecologist, Tom Braumandl, was completing the remapping of the biogeoclimatic units in the Cranbrook Forest District. As a consequence, some of the new biogeoclimatic variants recently mapped in the Cranbrook TSA were not fully documented so their predecessor characteristics or adjacent Terrestrial Ecosystem Mapping results had to be adapted
The resulting PEM map was used as a basis for the capability mapping.

2. Habitat capability ratings for each site series were developed by JMJ Holdings, reviewed and revised by Arc Wildlife Services, and finally reviewed and adjusted by the experts on the committee to classify the ungulate capability (under optimum conditions) and suitability (for existing structural stage) for each ungulate species except caribou. These ratings were based on information for site series climax vegetation characteristics (Braumandl and Curran 1992), which were used to approximate the forage species and cover characteristics for each site series and seral stage. Modifiers for slope, slope position, aspect and elevation were used to help delineate the highest potential winter habitat areas.

Capability classes, assigned to each site series in each biogeoclimatic unit, were occasionally adjusted by landscape unit or ecosection to reflect local differences in ungulate winter range carrying capacity. For example, within a specific biogeoclimatic unit, capability maps were often adjusted to exclude high elevations and mid-elevation narrow valleys known to have deep snow depth accumulations for long durations. In transitional biogeoclimatic variants, elevation rules based on local knowledge and previous inventories were used to approximate the zone within which snow was not limiting. For example in the MSdk, on warm aspects, the elevational extent is 1200-1650m, however, within this zone, the winter range habitat capability zone was limited to 1500m elevation except for a few small snow shadow areas.
(See the "Report and Recommendations of the East Kootenay Ungulate Winter Range Committee" for more detail)

Ungulate winter range to be managed was defined as capability classes 1 – 3 for the species with the highest rating in each site series. A few exceptional class 4 areas were incorporated where significant populations were isolated from higher class habitat.

During the process the committee discovered that it was not feasible to identify the escape terrain areas for Rocky Mountain bighorn sheep with relative certainty using GIS. Consequently, habitat and escape terrain areas known to the committee experts were mapped using aerial photographs and the East Kootenay biophysical mapping as a reference. The team mapped areas either presently used, or potentially having adequate forage and escape terrain to support sheep.

Mountain goat habitat was mapped using forest cover and TRIM map features as outlined in the Golden Mountain Goat Habitat Capability Study.

For some areas, such as high elevation winter habitats, the PEM ratings did not appear to capture ungulate winter range. In these cases the best habitat values reflected within the 1979 Biophysical Classification for Wildlife Capability polygons were selected. (See Information Gap section)

6.3 Management Objectives and Best Management Practices Development

6.3.1 Best Management Practices

Best management practices reflect recommendations for the application of strategic and operational practices which would assist the fulfillment of ungulate winter range management objectives (Appendix A, Tables D, E and F).

6.3.2 Management Objectives

1. Objectives were developed for the stand/site level (Appendix A, Table C). To assist with this, a review of stocking standards for fire-maintained ecosystems (natural disturbance type 4) as described in the Kootenay Boundary Land Use Plan Implementation Strategy was undertaken. The objective was to analyze, with the best available models, how to better optimize the mix of timber and forage produced with an emphasis on quality and quantity of each. Five forest growth models were used to simulate timber productivity under various stocking levels. The effect of thinning and burning on forest crown closure and understory plant cover were considered based on literature and local experience.

2. Objectives were developed at the landscape level for forage and cover (Appendix A, Table B). Committee members reviewed several approaches to setting objectives, including ecosystem capability, natural disturbance patterns, literature reviews on ungulate biology, and guidelines in other jurisdictions, research results from local studies, carrying capacity estimates, and timber management cycles. Final objectives were based on a combination of best available science and ecosystem and natural disturbance patterns. A rationale for both stand and landscape level guidelines is provided in a separate document.

A summary of the committee work, research reports, ungulate inventory, support documents and committee recommendations have been assembled for reference.

7. Access Planning

Although access planning is not a requirement of the East Kootenay Ungulate Winter Range Committee (EKUWRC), it is a factor of such significant importance with respect to retention of ungulate winter habitat effectiveness goals that the EKUWRC felt compelled to comment.

It is apparent, through the literature and previous experiences in B.C., that unregulated access related activities can adversely impact sensitive wildlife and wildlife habitats.
Wildlife responses to repetitive or cumulative access related disturbances may result in alterations of normal behavioral functions resulting in abandonment of quality habitat, interruption of foraging and breeding activities and intrude on seasonal and daily movement opportunities. Over time, this could result in reduced vigor, lower reproduction capability and ultimately reduced wildlife populations.

Consequently, the development and implementation of appropriate public recreation based access management strategies, such as the Recreation Management Strategy (RMS) and legislated access provisions expressed through the Wildlife Act (Access Management Areas, AMA's and Vehicle Access Hunting Closures, VAHC's) are instrumental with respect to achieving ungulate winter range management objectives in the Kootenay region.

To complement existing access legislation, the EKUWRC developed an expression of best management practices designed to mitigate human disturbance in designated ungulate winter habitat types (Appendix C).

8. Information Gaps and Future Work Requirements

In developing the capability mapping and management strategies, it became apparent that there were several areas where the information required to support biologically based decisions was absent. These include the following.

8.1 Biological Information

1. More detailed information on deer and elk wintering at mid-elevation, particularly in the MSdk, is required. Specific data needs include;

- an annual inventory of species deployment and populations wintering in these areas
- an inventory of winter habitat use in these areas with particular emphasis on the duration of use and the preference of cover types by species
- addressing areas where information is lacking such as the Kootenay River valley from the White River to Kootenay National Park, the Beaverfoot Valley, the Bush Arm and Cross River

2. Complete the evaluation of data from the East Kootenay Moose Project to evaluate the consistency of moose winter habitat use over the duration of the study.
3. Acquire and evaluate habitat use and selection by all species during high snowfall years and in particular acquire this information in the northern, deep snow pack, ecosections.
4. Data on key winter ranges for mountain goat is lacking. There was virtually no information on goats that could be used to assess the accuracy of the PEM model for goats. Potential winter ranges need to be surveyed to assess the mapping and to serve as a baseline for population trend estimates.

8.2 PEM mapping

The PEM mapping was intended as a strategic tool. Its accuracy can be improved by field truthing areas of sensitivity and areas where there was little field data to build the model, including:

- The wetter and drier site series in each BEC
- All site series in the ESSF in the Invermere district, and dry site series in the ESSF in general
- All site series in the MSdk
- All variants in the Golden district.

In future, field technicians should GPS locations of site series determinations, so that a file of ground-checked site series can be built. This can then be used to improve future iterations of PEM. Ideally, the PEM would eventually be replaced by TEM.

8.3 Developing capability ratings using PEM mapping

In general the PEM worked well to identify ungulate winter range. However, problems were encountered in trying to apply ratings consistently across the entire East Kootenay. For example, a rating for elk habitat in the MSdk that would identify the key winter range at Grave Prairie would incorrectly identify large areas of the MSdk in the rest of the EK that were not winter range. Consequently, for some BEC variants, ratings need to be area specific. Future iterations should develop ratings by a subset of areas, such as ecosections, within the East Kootenay.

8.4 Effectiveness Monitoring

The mapping and guidelines reflect the best current knowledge the EKUWRC has about ungulates in the East Kootenay, as well as compromises necessary to achieve consensus on the committee. Both mapping and guidelines should be assessed for their accuracy and effectiveness over coming years. The intent should always be to continually improve and incorporate the best and most recent information about ungulate winter range, so that the guidelines achieve their objectives of providing high quality winter habitat for ungulates. Suggestions for this include:

- The Ministry of Sustainable Resource Management and the Ministry of Water, Land and Air Protection should work together to co-ordinate winter ungulate surveys for population trends on key winter ranges to survey areas where information is lacking.
- The link between habitat and population numbers is a critical one that needs further refinement. For example, ungulate populations in areas with differing proportions of cover and forage should be surveyed and compared.
- Evaluating browse production under various cover retention and site disturbance treatments in the trench. The EKUWRC has some good information on light levels needed for bunchgrass production (Ross 1998). However, shrub production under different retention levels and distributions should be evaluated.
- Partial harvesting, in the managed forest, should be evaluated to determine snow interception capability, lichen and litter-fall contributions and ground forage production.

8.5 Problem Forest Types

Extensive areas within the Rocky Mountain Trench ecosection are overstocked.. This condition is limiting from a forage and merchantable timber perspective. Co-operative public, industrial and government efforts are required to convert and maintain these areas to a suitable condition.

References

Armleder, H.M., Dawson,R.J. and Thomson, R.N. 1986. Handbook for Timber and Mule Deer Management Co-ordination on Winter Ranges in the Caribou Forest Region. Land Management Handbook Number 13. British Columbia Ministry of Forests. Victoria, BC. 98 pages.

Braumandl, T.F. and Curran, M.P. 1992. A Field Guide for Site Identification and Interpretation for the Nelson Forest Region. Land Management Handbook Number 20. British Columbia Ministry of Forests. Victoria BC. 311 pages.

Jalkotzy, M. 2002. Ungulate Winter Range: A Review of Selected Literature Pertinent to the East Kootenay.

Jalkotzy, M. 2002. East Kootenay Ungulate Aerial Survey Data.

Ketchison, M.V. 2002. East Kootenay Predictive Ecosystem Mapping (PEM) Project report, 2002

Ministry of Environment, Lands and Parks, Resources Inventory Branch. 1999. Victoria BC. British Columbia Wildlife Habitat Rating Standards. Version 2.0. 97 pages.

Poole, K.G. and Stuart-Smith, K. 2002. Winter Habitat Selection by Moose in the East Kootenay, British Columbia, Year 1 Progress Report. 66 pages.

Ross, T.J., Powell, G.W. and DeMaere, C. 1998. The Effect of Thinning and Burning on PPdh2 Understory Plant Cover. British Columbia Ministry of Forests. Research Branch, Victoria, BC. 43 pages.

Sinclair B., Dool, T. and Ketchison M. 2001. Mountain Goat Habitat Capability Assessment Mapping Model for the Golden TSA. Final Maps and Report. 33 pages.

Appendix A:

Table A. Definitions of Habitat Types Used for East Kootenay Ungulate Winter Range Management Objectives and Best Management Practices.

Table B. Landscape Level Cover and Forage Objectives for East Kootenay Ungulate Winter Range.

Table C. Stand/Site Level Management Objectives and Stocking Standards for East Kootenay Ungulate Winter Range Management.

Table D. Stand/Site Level Tree Retention Best Management Practices for East Kootenay Ungulate Winter Range.

Table E. . Stand/Site Level Forage Best Management Practices for East Kootenay Ungulate Winter Range.

Table F. Recommended Landscape Level Site Series Management Objectives for East Kootenay Ungulate Winter Range.

Appendix B: East Kootenay Ungulate Winter Range Terms of Reference

Appendix C: Motorized Access: Best Management Practices

Appendix A:

6.0 Ungulate Winter Range Habitat Management Objectives and Best Management Practices

The following application notes are intended to clarify the intent of the objectives and practices in the tables which follow:

1) Forage and cover definitions are intended to apply to forest inventory attributes, and are not expected to require additional inventory beyond the regular update of forest cover. Height is inventory stand height or measured height where available. Crown closure, which is not currently projected in forest inventory, may be obtained from either forest inventory, air photo interpretation, or growth model projection. Age is projected inventory age or measured stand age where available.

2) Ungulate winter range objectives apply to Crown land outside of Protected areas.

Woodlot Licenses: The guidelines do not apply to private lands in Woodlot licenses. On Crown Land portions of Woodlot Licenses the guidelines should be applied in their entirety but Woodlot Licensees have the option to apply managed forest objectives on potential open range and open forest ecosystems, or open forest objectives to open range ecosystems, to respect the management intent conveyed by the tenure. Cover requirements apply to Woodlot crown lands on a proportionate basis.

Christmas Tree Permits: The guidelines do not apply to Christmas Tree Permits, however permittees are encouraged to follow best management practices provided in appendix 6 which have been developed in consideration of the management intent conveyed by the tenure. It is recommended that permits be reconfigured to remove managed forest and deciduous shrubland ecosystems from the permit area and ensure permit boundaries have minimal interference with surrounding habitat management, particularly broadcast burning.

3) Cover patches less than 3 hectares in size should not exceed 10% of the cover requirement. Cover patch size diversity is encouraged.

4) Variances to landscape level objectives which are necessary to address forest health issues require the approval of the Regional Manager, Ministry of Water, Land and Air Protection, or designate. Variances to stand level objectives may be approved by the District Manager, Ministry of Forests.

5) The implementation of habitat type definitions for landscape level forage and cover objectives is based upon Predictive Ecosystem Mapping which can be refined by Terrestrial Ecosystem Mapping or higher resolution Predictive Ecosystem Mapping where approved by the Regional Manager, Ministry of Water, Land and Air Protection. The spatial implementation of habitat types for stand level objectives is to be based on field verification.

6) Available models used to develop stand level objectives for open forest have a high degree of uncertainty. Current knowledge does not provide a high level of certainty about forage response, productivity or timber impacts. It is intended and recommended that each operator be permitted and encouraged to vary from the stand level objectives provided on up to 10% of treatment areas, subject to providing a rationale for the variance, and a commitment to providing a follow-up assessment on the effectiveness of the standards applied in achieving management objectives.

7) Objectives apply within mapped ungulate winter range by landscape unit. When landscape level objectives cannot be met, a recruitment strategy or a local habitat management plan that respects their intent must be prepared for approval by Regional Manager, Ministry of Water Land and Air Protection

Table A. Definitions of Habitat Types Used for East Kootenay Ungulate Winter Range Management Objectives and Best Management Practices. Minimum required management unit size is 2 hectares.

Habitat Type	Definition	Field Verified Ecosystem Units
Open Range	Lands ecologically suited to production of bunchgrasses and dryland shrub species. Snow accumulations are typically low. (includes existing open range, meadows, cultivated and similar cover classes)	**PPdh2**, 02a, 02b, 01 **IDFdm2, un**, 02,03; **IDFdm2a, un2**, 02; **MSdk**, 02 **ICHdm**, 02; **ICHwk1**, 02; **ICHvk1**, 02 (& Rock talus sites)
Open Forest	Lands ecologically suited for production of large crowned open forest with bunchgrasses and dryland shrub species. Snow accumulations are typically light. (typically <40% crown closure, multi-storied stand structure, and low stocking levels)	**PPdh2**, 03, 04 **IDFdm2, un**, 01 warm, & neutral <1000m **IDFdm2a, un2**, 03 Fd leading[1] **MSdk**, 03 Fd leading; **ICHdw**, 02; **ICHdm**, 03 Fd leading **ICHmk1**, 02; **ESSFdk**, 02; **ICHmw1**, 02
Managed Forest (Dry)	Lands ecologically suited for Fd and Py dominated forest. These provide forage values for 1-3 decades during the forest regeneration phase.	**IDFdm2, un**, 01 cool, and neutral >1000m 04, 05
Managed Forest (Transitional)	Lands ecologically suited for Douglas-fir climax stands often having a heavy lodgepole pine and larch component. These provide forage for 1-3 decades during the forest regeneration phase. Snowpack is typically light to moderate.	**IDFdm2a, un2**, 03 Non-Fd leading, 04, 01, 05
Managed Forest (Mesic)	Lands ecologically suited to pine leading stands which provide forage values for 1-3 decades during the forest regeneration phase. Moderate snow accumulations necessitate the retention of cover.	**MSdk**, 03 Non-Fd leading, 04, 01, 05 where elk, deer capability mapped.
Managed Forest (Moist)	Moist ecosystems providing forage values for 1-3 decades during the forest regeneration phase. Moderate snow necessitates retention of cover.	**MSdk**, 03 Non-Fd leading, 04, 01, 05 where moose capability only mapped. **ICHdw**, 01a, 01b, 03, 04; **ICHdm**, 03 non-Fd leading, 01, 04, 05
Managed Forest (Wet)	Wetter ecosystems providing forage values for 1-3 decades during the forest regeneration phase. Moderate to deep snow necessitates retention of cover.	All other site series not listed above or below in **ICHmk1, ESSFdm1, ESSFdm2, ESSFdk, ICHmw1, ESSFmm1, ESSFwm, ICHwk1, ICHvk1** **ESSFwc2, ESSFvc**
Riparian, Deciduous and Shrub Lands	Lands ecologically suited as brushfields, non-productive and deciduous forest and shrub communities generally along water features. Often containing patches of Sx, Cw, Hw or Bl	Approximately characterized by **IDFdm2, un, dm2a, un2**, 06,07 **MSdk**, 06,07; **ICHmk1**, 08; **ESSFdk**, 06,07; **ICHmw1**, 07 **ESSFmm1**, 07; **ICHwk1**, 09; **ESSFvc**, 06 And similar wetland riparian areas in other BECs.
Avalanche Tracks	High to moderate capability avalanche tracks as rated for Grizzly bear habitat[2]. Usually characterized by lush tall shrub and forb vegetation.	Various site series.
Alpine/Subalpine	High elevation steep rocky habitats typically used by Mountain goats. Usually sparsely forested or open with sparse to moderate forage.	Various biogeoclimatic variants – rock outcrops, and non-productive forest
Alpine Grasslands	High elevation windswept ridges and warm aspect grasslands typically used by Rocky Mountain Bighorn Sheep and Mountain goats.	Alpine tundra with fair soils.

---

[1] Fd leading is defined as more than 30% Douglas-fir at time of harvest.

[2] Mowat G. and R. Ramcharita, 1999. A Review of Grizzly Bear Habitat Use and Management Options for the Kootenay Region of B.C. Final Report for MELP, Nelson.

Table B. Landscape Level Cover and Forage Objectives for East Kootenay Ungulate Winter Range.

Habitat Type	Ungulate Winter Range Management Objective	Primary Ungulate Species	Landscape Level Minimum Requirement[3]	Cover and Forage Definitions	Comments
Open Range	Promote preferred forage production.	Elk, Bighorn sheep Mule deer Whitetailed deer Mountain goat	Cover N/A See comments Forage N/A See footnote	Preferred forage is climax grass and dryland shrub communities.	Cover requirements will be met by adjacent open forest stocking standards and managed forest retention areas.
Open Forest	Promote preferred forage production in understory.	Elk, Bighorn sheep Mule deer White-tailed deer Mountain goat	Cover N/A See comments. Forage N/A See footnote	Preferred forage is climax grass and dryland shrub communities.	Cover requirements will be met through open forest tree retention requirements and adjacent managed forest retention areas.
Managed Forest (Dry)	Maintain a component of early seral vegetation through time.	Elk Bighorn sheep Mule deer White-tailed deer	Cover 10% Forage 10%	Age ≥100, and Evergreen[4] CC ≥20% , or Layer 1 age ≥ 100 years. ≤30 year-old forest	Applies to mapped dry managed forest. Preference for Fd leading stands is encouraged.
Managed Forest (Transitional)	Maintain a component of early seral vegetation through time.	Moose, Elk Mule deer White-tailed deer	Cover 20% Including up to 10% Forage 10%	Height ≥ 15m, and Evergreen CC ≥40%. ≥100 years Fd, Sx leading ≤30 year-old forest	Applies to mapped transitional managed forest within ungulate winter range. Applies to suitable stands if available.
Managed Forest (Mesic)	Maintain a component of early seral vegetation through time.	Elk Mule deer	Cover 30% Including mature & old 20% Forage 10%	Height ≥ 15m, and Evergreen CC ≥40% ≥100 year-old forest ≤30 year-old forest	Applies to mapped mesic managed forest. Prefer non-Pl leading where available. Partial cut stands with rank 1 layer meeting these specifications can qualify.
Managed Forest (Moist)	Maintain a component of early seral vegetation through time.	Moose	Cover 20% Forage 10%	Height ≥ 15m, and Evergreen CC ≥40% ≤30 year-old forest	Applies to mapped moist managed forest within ungulate winter range.
Managed Forest (Wet)	Maintain a component of early seral vegetation through time.	Moose	Cover 30% Forage 10%	Height ≥ 15m, and Evergreen CC ≥40% ≤30 year-old forest	Applies to mapped wet managed forest within ungulate winter range.
Riparian, Deciduous and Shrub Lands	Maintain high shrub production interspersed with good snow interception cover	Moose, Elk Mule deer Whitetailed deer	Where ecologically suited, maintain or enhance climax (non-pine) conifer and deciduous forest		Riparian stands meeting cover definition can contribute to managed forest cover objectives.
Avalanche Tracks	Retain cover along high and mod. avalanche zones	Moose, Elk	Retain all forest within track complexes and 50m of forest outside of complexes[5]. Retain 100m of cover adjacent to both sides of isolated tracks. Maximum harvest 20% of basal area on one side of avalanche track.		
Alpine/ Subalpine	Retain cover along moderate to high capability habitat	Mountain goat	Retain available forested habitat patches adjacent to moderate to high value habitats.		
Alpine Grasslands	Retain cover along moderate to high capability habitat	Bighorn sheep Mountain goat	Retain 100m wide forested habitat cover patches adjacent to moderate to high value habitats.		

---

[3] Ideally manage for forage targets of 100% on Open Range and Open Forest sites, and at least 20% on managed forest sites. Forage maintenance and enhancement is a multi-jurisdictional responsibility and is not expected to be achieved by forest licensees alone. Licensees, ranchers, government, restoration committees, and other agencies are encourages to collaborate to achieve forage objectives through slashing and burning programs.

[4] Evergreen crown closure means all conifers except larch counted at full relative crown closure; and larch and deciduous at 50% of their relative crown closure.

[5] Avalanche complexes are defined as a series of snow avalanche tracks alternating with strips of forest (>2 tracks/km, or <500m between tracks.

Table A. Definitions of Habitat Types Used for East Kootenay Ungulate Winter Range Management Objectives and Best Management Practices.
Minimum required management unit size is 2 hectares.

Habitat Type	Definition	Field Verified Ecosystem Units
Open Range	Lands ecologically suited to production of bunchgrasses and dryland shrub species. Snow accumulations are typically low. (includes existing open range, meadows, cultivated and similar cover classes)	**PPdh2,** 02a, 02b, 01 **IDFdm2, un** 02,03; **IDFdm2a, un2**, 02; **MSdk**, 02 **ICHdm** 02; **ICHwk1,** 02; **ICHvk1** 02 (& Rock talus sites)
Open Forest	Lands ecologically suited for production of large crowned open forest with bunchgrasses and dryland shrub species. Snow accumulations are typically light. (typically <40% crown closure, multi-storied stand structure, and low stocking levels)	**PPdh2**, 03, 04 **IDFdm2, un**, 01 warm, & neutral <1000m **IDFdm2a, un2,** 03 Fd leading **MSdk** 03 Fd leading; **ICHdw**, 02; **ICHdm**, 03 Fd leading **ICHmk1** 02, **ESSFdk** 02, **ICHmw1** 02
Managed Forest (Dry)	Lands ecologically suited for Fd and Py dominated forest. These provide forage values for 1-3 decades during the forest regeneration phase.	**IDFdm2, un**, 01 cool, and neutral >1000m 04, 05
Managed Forest (Transitional)	Lands ecologically suited for Douglas fir climax stands often having a heavy lodgepole pine and larch component. These provide forage for 1-3 decades during the forest regeneration phase. Snowpack is typically light to moderate.	**IDFdm2a, un2**, 03 Non-Fd leading, 04, 01, 05
Managed Forest (Mesic)	Lands ecologically suited to pine leading stands which provide forage values for 1-3 decades during the forest regeneration phase. Moderate snow accumulations necessitate the retention of cover.	**MSdk**, 03 Non-Fd leading; 04, 01, 05 where elk, deer capability mapped.
Managed Forest (Moist)	Moist ecosystems providing forage values for 1-3 decades during the forest regeneration phase. Moderate snow necessitates retention of cover.	**MSdk**, 03 Non-Fd leading 04, 01, 05 where moose capability only mapped. **ICHdw** 01a, 01b, 03, 04; **ICHdm** 03 non-Fd leading; 01, 04, 05
Managed Forest (Wet)	Wetter ecosystems providing forage values for 1-3 decades during the forest regeneration phase. Moderate to deep snow necessitates retention of cover.	All other site series not listed above or below in **ICHmk1, ESSFdm1, ESSFdm2, ESSFdk, ICHmw1, ESSFmm1, ESSFwm, ICHwk1, ICHvk1** **ESSFwc2, ESSFvc**
Riparian, Deciduous and Shrub Lands	Lands ecologically suited as brushfields, non-productive and deciduous forest and shrub communities generally along water features. Often containing patches of Sx, Cw, Hw or Bl.	Approximately characterized by **IDFdm2, un, dm2a, un2**, 06,07 **MSdk**, 06,07 **ICHmk1**, 08, **ESSFdk** 06,07, **ICHmw1**, 07, **ESSFmm1**, 07 **ICHwk1** 09, **ESSFvc**, 06 And similar wetland riparian areas in other BECs
Avalanche Tracks	High to moderate capability avalanche tracks as rated for Grizzly bear habitat². Usually characterized by lush tall shrub and forb vegetation.	Various site series.
Alpine/Subalpine	High elevation steep rocky habitats typically used by Mountain goats. Usually sparsely forested or open with sparse to moderate forage.	Various biogeoclimatic variants - rock outcrops, and non-productive forest
Alpine Grasslands	High elevation windswept ridges and warm aspect grasslands typically used by Rocky Mountain Bighorn Sheep and Mountain goats.	Alpine tundra with fair soils

---

[1] Fd leading is defined as more than 30% Douglas-fir at time of harvest.

[2] Mowat G. and R. Ramcharita. 1999. A Review of Grizzly Bear Habitat Use and Management Options for the Kootenay Region of B.C. Final Report for MELP, Nelson

Table B. Landscape Level Cover and Forage Objectives for East Kootenay Ungulate Winter Range.

Habitat Type	Ungulate Winter Range Management Objective	Primary Ungulate Species	Landscape Level Minimum Requirement[1]	Cover and Forage Definitions	Comments
Open Range	Promote preferred forage production	Elk, Bighorn sheep Mule deer Whitetailed deer Mountain goat	Cover N/A See comments Forage N/A See footnote	Preferred forage is climax grass and dryland shrub communities	Cover requirements will be met by adjacent open forest stocking standards and managed forest retention areas
Open Forest	Promote preferred forage production in understory.	Elk, Bighorn sheep Mule deer White-tailed deer Mountain goat	Cover N/A See comments Forage N/A See footnote	Preferred forage is climax grass and dryland shrub communities	Cover requirements will be met through open forest tree retention requirements and adjacent managed forest retention areas.
Managed Forest (Dry)	Maintain a component of early seral vegetation through time	Elk Bighorn sheep Mule deer White-tailed deer	Cover 10% Forage 10%	Age >100, and Evergreen[2] CC >20%, or Layer 1 age >100 years <30 year-old forest	Applies to mapped dry managed forest. Preference for Fd leading stands is encouraged
Managed Forest (Transitional)	Maintain a component of early seral vegetation through time	Moose, Elk Mule deer White-tailed deer	Cover 20% Including up to 10% Forage 10%	Height >15m, and Evergreen CC >40% >100 years Fd, Sx leading <30 year-old forest	Applies to mapped transitional managed forest within ungulate winter range Applies to suitable stands if available
Managed Forest (Mesic)	Maintain a component of early seral vegetation through time	Elk Mule deer	Cover 30% Including mature & old 20% Forage 10%	Height >15m, and Evergreen CC >40% >100 year-old forest <30 year-old forest	Applies to mapped mesic managed forest. Prefer non-Pl leading where available Partial cut stands with rank 1 layer meeting these specifications can qualify
Managed Forest (Moist)	Maintain a component of early seral vegetation through time	Moose	Cover 20% Forage 10%	Height >15m, and Evergreen CC >40% <30 year-old forest	Applies to mapped moist managed forest within ungulate winter range
Managed Forest (Wet)	Maintain a component of early seral vegetation through time	Moose	Cover 30% Forage 10%	Height >15m, and Evergreen CC >40% <30 year-old forest	Applies to mapped wet managed forest within ungulate winter range
Riparian, Deciduous and Shrub Lands	Maintain high shrub production inter-spersed with good snow interception cover	Moose, Elk Mule deer Whitetailed deer	Where ecologically suited, maintain or enhance climax (non-pine) conifer and deciduous forest		Riparian stands meeting cover definition can contribute to managed forest cover objectives
Avalanche Tracks	Retain cover along high and mid avalanche zones	Moose, Elk	Retain all forest within track complexes[3] and 50m of forest outside of complexes. Retain 100m of cover adjacent to both sides of isolated tracks. Maximum harvest 30% of basal area on one side of avalanche track		
Alpine Subalpine	Retain cover along moderate to high capability habitat	Mountain goat	Retain available forested habitat patches adjacent to moderate to high value habitats		
Alpine Grasslands	Retain cover along moderate to high capability habitat	Bighorn sheep Mountain goat	Retain 100m wide forested habitat cover patches adjacent to moderate to high value habitats		

[1] Ideally manage for forage [illegible] of 100% on Open Range and Open Forest sites, and at least 20% on managed [illegible] sites. Forage maintenance and enhancement is a multi-jurisdictional responsibility [illegible] expected to be achieved [illegible] licensees alone. Licensees, ranchers, government, restoration committees, and other agencies are encourages to collaborate to achieve forage objectives through slashing [illegible] programs.
[2] Evergreen crown closure [illegible] all conifers except larch counted at full relative crown closure, and larch and [illegible] at 50% of their relative crown closure.
[3] Avalanche complexes [illegible] as a series of snow avalanche tracks alternating with strips of forest (>2 tracks [illegible] 300m between tracks.

Table C. Stand/Site Level Management Objectives and Stocking Standards for East Kootenay Ungulate Winter Range Management.[6]

Habitat Type	Target Stocking Standard (Stems/ha)	Minimum Stocking Standard (Stems/ha)	Maximum Stocking Standard (Stems/ha)	Species Preference for Residual Trees[7]	Free-Growing Window
Open Range	**20** including 5 of the largest 1/3 of the diameter range	**0** 0	**75** 20 of the largest 1/3 of the diameter range	Favour Py in PPdh2, and Douglas-fir with a component of deciduous trees where available in other BECs.	**0-2** years
Open Forest[8]	**150** including 30 of the largest 1/3 of the diameter range	**76** including 20 of the largest 1/3 of the diameter range	**400** 50 of the largest 1/3 of the diameter range	Favour Py in PPdh2, and Douglas-fir with a component of deciduous trees and Lw where available in other BECs.	**1-3** years
Managed Forest (Dry)	(300, 400, 500), **600** Multi-layered stocking standards	(300, 400, 500), **600** Multi-layered stocking standards	Provincial standards[9]	Favour climax trees, including Lw with a component of decid. trees where available.	**12-20** years; **3** yrs where stocked with L1&2.
Managed Forest (Transitional)	Provincial standards	Provincial standards	Provincial standards[16]	Favour deciduous and groups of climax tree species.	**12-20** years
Managed Forest (Mesic)					
Managed Forest (Moist)					
Managed Forest (Wet)					
Riparian, Deciduous and Shrub Lands	Normal riparian standards See Best Management Practices	Normal riparian standards See Best Management Practices	Normal riparian standards See Best Management Practices	Favour large crowned Fd, Sx, Act, Cw, Bl	N/A See Best Management Practices
Avalanche Tracks Reserve Zone	N/A	70% of existing stand basal area	N/A	Prefer Sx, Bl retention.	**1-3** years
Alpine/ Subalpine	N/A	N/A	N/A	N/A	N/A
Alpine Grasslands	N/A	N/A	N/A	N/A	N/A

---

[6] Up to 10% of an operator's plans may deviate from these standards where a suitable rationale is provided and a commitment is made to do a follow-up assessment of the effectiveness of the alternative standards at achieving forage and timber objectives.

[7] Species preference must consider other wildlife, biodiversity, silviculture and forest health factors balanced with these objectives.

[8] These stand targets are based on growth models which indicate that at least one half of site timber potential will be produced, and forage response data that indicate that preferred grass (eg. bluebunch wheatgrass and rough fescue) and browse species (eg. Saskatoon) can be sustained if stands are managed to these levels.

[9] "Management should not exceed the maximum stocking standard. Co-operation among licensees, government, restoration committees and other agencies will be required in circumstances where excess regeneration beyond the maximum is retained on site. Harvest activity should be consistent with ecosystem restoration objectives for that site. It is recognized that more than one entry may be required to achieve long-term objectives. Treatment plans should indicate how long-term objectives will ultimately be achieved.

Table D. Stand/Site Level Tree Retention Best Management Practices for East Kootenay Ungulate Winter Range.

Habitat Type	Intertree Spacing	Tree Layer	Diameter	Target Number[10]	Preferred Height	Layer 1 Tree Characteristics
Open Range	Range 3-500 m (Avg. 22.4m)	1a	>=30 cm dbh	} 5	} >=15 m	Retain large crowned veteran trees, and standing dead trees where available.
		1b	>=12.5 cm dbh	}	}	
		2	>7.5-<12.5 cm dbh	5	>5m-10m	
		3	1.3 m tall to < 7.5 cm dbh	10	>1.3m-5m	
		4	<1.3 m tall	0		
Open Forest	Range 3-18 m[11] (Avg. 8.8m)	1a	>=30 cm dbh	} 30	} >=15 m	Retain large-crowned veteran trees, and standing dead trees where available. Retain tall well-formed trees for future harvesting opportunity.
		1b	>=12.5 cm dbh	}	}	
		2	>7.5-<12.5 cm dbh	50	>5m-10m	
		3	1.3 m tall to < 7.5 cm dbh	70	>1.3m-5m	
		4	<1.3 m tall	0		
Managed Forest (Dry)	Range 2-9 m (Avg. 4.4)	1a	>=30 cm dbh	}	} >=15 m	Multi-layered stocking standards apply as described in the Nelson Forest Region, Establishment to Free-Growing guidebook.
		1b	>=12.5 cm dbh	} 300	}	
		2	>7.5-<12.5 cm dbh	400	>5m-10m	
		3	1.3 m tall to < 7.5 cm dbh	500	>1.3m-5m	
		4	<1.3 m tall	600		
Managed Forest (Transitional)	Normal Practices Apply	N/A	Normal Practices Apply	Normal Practices Apply	Normal Practices Apply	Retain large-crowned veteran trees, and standing dead trees where available.
Manaaged Forest (Mesic)						
Managed Forest (Moist)						
Managed Forest (Wet)						
Riparian, Deciduous and Shrub Lands	Variable	N/A	Promote rejuvenation of deciduous trees and shrubs with scattered wildlife trees where available.	N/A	N/A	Retain large-crowned veteran trees, and standing dead trees where available.
Avalanche Tracks Applies to mod. to high quality tracks only	N/A	N/A	Prefer greater than 30cm dbh as indicator of crown mass to intercept snow.	N/A	>=15m height	Retain large cover trees along the edges of avalanche tracks.
Alpine/ Subalpine	N/A	N/A		N/A		
Alpine Grasslands	N/A	N/A		N/A		

---

[10] Surveys: Open Range estimated to have stocking within the prescribed levels may be surveyed using "walkthrough method" but inventory information must be gathered. Open Range over prescribed levels, and Open Forest, should be surveyed using multilayer plot tally, 5.64m radius (1/100ha) plots distributed on uniform 100x100m grid, with optional prism sweep for layer one trees, and estimated heights. Countable height for maximum density will be 1.0cm. Further details may be obtained from the Ministry of Forests.

[11] It is recommended that no more than 2 well-spaced trees be retained within 3m of each other at a time. Uniform spacing maximizes timber production; irregular spacing increases forage production.

Table C. Stand/Site Level Management Objectives and Stocking Standards for East Kootenay Ungulate Winter Range Management.[6]

Habitat Type	Target Stocking Standard (Stems/ha)	Minimum Stocking Standard (Stems/ha)	Maximum Stocking Standard (Stems/ha)	Species Preference for Residual Trees[7]	Free-Growing Window
Open Range	**20** including 5 of the largest 1/3 of the diameter range	**0** 0	**75** 20 of the largest 1/3 of the diameter range	Favour Py in PPdh2, and Douglas-fir with a component of deciduous trees where available in other BECs	**0-2** years
Open Forest[8]	**150** including 30 of the largest 1/3 of the diameter range	**76** including 20 of the largest 1/3 of the diameter range	**400** 50 of the largest 1/3 of the diameter range	Favour Py in PPdh2, and Douglas-fir with a component of deciduous trees and Lw where available in other BECs	**1-3** years
Managed Forest (Dry)	(300, 400, 500), **600** Multi-layered stocking standards	(300, 400, 500), **600** Multi-layered stocking standards	Provincial standards[9]	Favour climax trees, including Lw with a component of decid. trees where available	**12-20** years; **3** yrs where stocked with L1&2
Managed Forest (Transitional)	Provincial standards	Provincial standards	Provincial standards[9]	Favour deciduous and groups of climax tree species	**12-20** years
Managed Forest (Mesic)					
Managed Forest (Moist)					
Managed Forest (Wet)					
Riparian, Deciduous and Shrub Lands	Normal riparian standards See Best Management Practices	Normal riparian standards See Best Management Practices	Normal riparian standards See Best Management Practices	Favour large crowned Fd, Sx, Act Cw, Bl	N/A See Best Management Practices
Avalanche Tracks Reserve Zone	N/A	70% of existing stand basal area	N/A	Prefer Sx, Bl retention	**1-3** years
Alpine/ Subalpine	N/A	N/A	N/A	N/A	N/A
Alpine Grasslands	N/A	N/A	N/A	N/A	N/A

---

[6] Up to 10% of an operator's plans may deviate from these standards where a suitable rationale is provided and a commitment is made to do a follow-up assessment of the effectiveness of the alternative standards at achieving forage and timber objectives.

[7] Species preference must consider other wildlife, biodiversity, silviculture and forest health factors balanced with these objectives.

[8] These stand targets are based on growth models which indicate that at least one half of site timber potential will be produced, and forage response data that indicate that preferred grass (e.g. bluebunch wheatgrass and rough fescue) and browse species (e.g. Saskatoon) can be sustained if stands are managed to these levels.

[9] "Management should not exceed the maximum stocking standard. Co-operation among licensees, government, restoration committees and other agencies will be required in circumstances where excess regeneration beyond the maximum is retained on site. Harvest activity should be consistent with ecosystem restoration objectives for that site. It is recognized that more than one entry may be required to achieve long-term objectives. Treatment plans should indicate how long-term objectives will ultimately be achieved

Table D. Stand/Site Level Tree Retention Best Management Practices for East Kootenay Ungulate Winter Range.

Habitat Type	Intertree Spacing	Tree Layer	Diameter	Target Number[10]	Preferred Height	Layer 1 Tree Characteristics
Open Range	Range 3-500 m (Avg. 22.4m)	1a	≥30 cm dbh	5	≥15 m	Retain large crowned veteran trees, and standing dead trees where available
		1b	≥12.5 cm dbh			
		2	>7.5-<12.5 cm dbh	5	>5m-10m	
		3	1.3 m tall to <7.5 cm dbh	10	>1.3m-5m	
		4	<1.3 m tall	0		
Open Forest	Range 3-18 m[11] (Avg. 8.8m)	1a	≥30 cm dbh	30	≥15 m	Retain large-crowned veteran trees, and standing dead trees where available. Retain tall well-formed trees for future harvesting opportunity
		1b	≥12.5 cm dbh			
		2	>7.5-<12.5 cm dbh	50	>5m-10m	
		3	1.3 m tall to <7.5 cm dbh	70	>1.3m-5m	
		4	<1.3 m tall	0		
Managed Forest (Dry)	Range 2-9 m (Avg. 4.4)	1a	≥30 cm dbh		≥15 m	Multi-layered stocking standards apply as described in the Nelson Forest Region, Establishment to Free-Growing guidebook
		1b	≥12.5 cm dbh	300		
		2	>7.5-<12.5 cm dbh	400	>5m-10m	
		3	1.3 m tall to <7.5 cm dbh	500	>1.3m-5m	
		4	<1.3 m tall	600		
Managed Forest (Transitional)	Normal Practices Apply	N/A	Normal Practices Apply	Normal Practices Apply	Normal Practices Apply	Retain large-crowned veteran trees and standing dead trees where available
Manaaged Forest (Mesic)						
Managed Forest (Moist)						
Managed Forest (Wet)						
Riparian, Deciduous and Shrub Lands	Variable	N/A	Promote rejuvenation of deciduous trees and shrubs with scattered wildlife trees where available	N/A	N/A	Retain large-crowned veteran trees and standing dead trees where available
Avalanche Tracks Applies to mod. to high quality tracks only	N/A	N/A	Prefer greater than 30cm dbh as indicator of crown mass to intercept snow	N/A	>15m height	Retain large cover trees along the edges of avalanche tracks
Alpine/ Subalpine	N/A	N/A		N/A		
Alpine Grasslands	N/A	N/A		N/A		

---

[10] Surveys: Open Range estimated to have stocking within the prescribed levels may be surveyed using "walkthrough method" but inventory information must be gathered. Open Range over prescribed levels, and Open Forest, should be surveyed using multilayer plot tally, 5.64m radius (1/100ha) plots distributed on uniform 100x100m grid, with optional prism sweep for layer one trees, and estimated heights. Countable height for maximum density will be 1.3m. Further details may be obtained from the Ministry of Forests.

[11] It is recommended that no more than 2 tall spaced trees be retained within 5m of each other at a time. Uniform spacing maximizes timber production; irregular spacing increases forage production.

Table E. Stand/Site Level Forage Best Management Practices for East Kootenay Ungulate Winter Range.

Habitat Type	Forage Management	Cover Tree Distribution	Treatments	Range Practices
Open Range	Promote healthy climax grassland community.	Vary from small clusters to scattered individual trees. Retain some cover adjacent to high elevation grasslands.	Burn periodically to reduce encroachment and enhance preferred forage. Sustained noxious weed control is required to restore grassland communities. Focus restoration treatments on priority areas where range restoration will achieve maximum benefits. Seed roads and landings with native seed if available to discourage noxious weed invasion and restore forage productivity.	Range stewardship plans and range use plans must be consistent with regulations and should set grazing rotations that maintain health and vigour of climax grasses, and leave late season growth for winter use by ungulates.
Open Forest	Promote healthy climax shrubs, forbs, and grasses.	Some variability is acceptable but tree distribution should ensure all trees can achieve merchantable characteristics in a few decades to facilitate re-entry. Irregular tree distribution will increase forage production.	Focus restoration treatments on priority areas where range restoration will achieve maximum benefits. Slashing to eliminate excess regeneration and poor quality stems is encouraged. Follow up burns may be necessary to eliminate excess regeneration and rejuvenate grass and shrub species such as Saskatoon and ceanothus. Treat noxious weeds to discourage invasion. Seed roads and landings with native seed if available to discourage noxious weed invasion and restore forage productivity.	Range stewardship plans and range use plans must be consistent with regulations and should set grazing rotations that maintain health and vigour of climax grasses, and leave late season growth for winter use by ungulates.
Managed Forest (Dry)	Where considered compatible with regeneration objectives, promote grass and shrub species.	Irregular cover edges along openings are preferred by most ungulates. Use varied wildlife tree retention configurations with patches and scattered single trees. Fd, and Sx are preferred cover tree species. Retain cover along ridges and knolls, adjacent to forage areas, and near riparian zones and seeps where possible.	Juvenile spacing helps to extend forage production. Irregular spacing helps to extend forage production. Slashing decadent shrub species helps to rejuvenate them. Treat noxious weeds to reduce invasion. Cut some deciduous stems to promote suckering.	Range stewardship plans and range use plans must be consistent with regulations and should set grazing rotations that maintain health and vigour of climax grasses, and leave late season growth for winter use by ungulates.
Managed Forest (Transitional)				
Managed Forest (Mesic)				
Managed Forest (Moist)				
Managed Forest (Wet)				
Riparian, Deciduous, Shrublands	Promote dogwood, willow and other ungulate forage species.	Retain or promote stands and scattered clumps of coniferous trees among and adjacent to deciduous and shrub dominated vegetation types. Favour Sx, Cw and Act	Some coniferous removal, particularly Pl, from riparian habitat is acceptable to promote shrub production.	Maintain natural or create artificial barriers to avoid disruption of riparian habitats by livestock. Select watering sites with minimal soil and vegetation sensitivity.
Avalanche Tracks	Maintained by natural processes	Retain wildlife tree patches and other cover reserves adjacent to avalanche tracks.	On high and moderate rated avalanche tracks, retain forest within track complexes and 50m of cover outside of complexes. Retain 100m of cover adjacent to both sides of isolated tracks.	N/A
Alpine/ Subalpine	N/A	N/A	N/A	N/A
Alpine Grasslands	N/A	N/A	N/A	N/A

Table F. Recommended Landscape Level Site Series Management Objectives for East Kootenay Ungulate Winter Range.

Suggested minimum management unit size is 2 hectares. The split in MSdk 03,01,04,05 is based on MSdk area used by elk and mule deer.

BEC Subzone Variant	4 Steps Dryer/ Poorer	3 Steps Dryer/ Poorer	2 Steps Dryer/ Poorer	1 Step Dryer/ Poorer	Zonal	1 Step Wetter/ Richer	2 Steps Wetter/ Richer	3 Steps Wetter/ Richer	4 Steps Wetter/ Richer	5 Steps Wetter/ Richer
PPdh2			02a	02b	01	03	04	Wetland/ Riparian		
IDFdm2, un			02	03	**01 W, &N<1000m** **01 C, &N >1000m**	**04**	**05**	06	07	
IDFdm2a (un2)		02	03 Fd* 03 *	04	**01**	05	06	07		
MSdk		02	03 Fd* **03 *** **03 ***	**04 elk, deer** **04 moose**	**01 elk, deer** **01 moose**	**05 elk, deer** **05 moose**	06	07		
ICHdw		Rock/ Talus	02	**01a**	**01b**	**03**	**04**	Wetland/ Riparian		
ICHdm			02	03* Fd* **03 Non-Fd**	**01**	**04**	**05**	Wetland/ Riparian		
ICHmk1	Rock/ Talus	02	**03**	**04**	**01**	**05**	**06**	**07**	08	
ESSFdm1		Rock/ Talus	**02**	**03/04**	**01**	**05**	**06**	Wetland/ Riparian		
ESSFdm2		Rock/ Talus	**02**	**03**	**01**	**04**	**05**	Wetland/ Riparian		
ESSFdk	Rock/ Talus	02	**03**	**04**	**01**	**05**	06	07		
ICHmw1	Rock/ Talus	02	**03**	**04**	**01**	**05**	**06**	07		
ESSFmm 1	Rock/ Talus	**02**	**03**	**04**	**01**	**05**	**06**	07		
ESSFwm		Rock/ Talus	**02**	**03**	**01**	**04**	Wetland/ Riparian			
ICHwk1			02	**04**	**01**	05	**06**	**07**	**08**	09
ICHvk1		02	**03**	**04**	**01**	05	**06**	Wetland/ Riparian		
ESSFwc2	**02**	**03**	**04**	**05**	**01**	**06**	**07**	**08**	**09**	Wetland/ Riparian
ESSFvc		Rock/ Talus	**02**	**03**	**01**	**04**	**05**	06		

C=Cool aspects, N=Neutral aspects, W=Warm aspects, Fd=Douglas-fir leading stands. Numbers refer to the site series in each variant.

* Manage as Open Forest where stands have more than 150 stems/ha of Douglas-fir over 30cm dbh at time of harvest. If less, manage as Managed Forest.

Habitat Type	Open Range	Open Forest	**Managed Forest Dry**	**Managed Forest Transitional**	**Managed. Forest Mesic**	**Managed Forest Moist**	**Managed Forest Wet**	**Shrublands**

Table E. Stand/Site Level Forage Best Management Practices for East Kootenay Ungulate Winter Range.

Habitat Type	Forage Management	Cover Tree Distribution	Treatments	Range Practices
Open Range	Promote healthy climax grassland community.	Vary from small clusters to scattered individual trees. Retain some cover adjacent to high elevation grasslands.	Burn periodically to reduce encroachment and enhance preferred forage. Sustained, noxious weed control is required to restore grassland communities. Focus restoration treatments on priority areas where range restoration will achieve maximum benefits. Seed roads and landings with native seed if available to discourage noxious weed invasion and restore forage productivity.	Range stewardship plans and range use plans must be consistent with regulations and should set grazing rotations that maintain health and vigour of climax grasses, and leave late season growth for winter use by ungulates.
Open Forest	Promote healthy climax shrubs, forbs and grasses.	Some variability is acceptable but tree distribution should ensure all trees can achieve merchantable characteristics in a few decades to facilitate re-entry. Irregular tree distribution will increase forage production.	Focus restoration treatments on priority areas where range restoration will achieve maximum benefits. Slashing to eliminate excess regeneration and poor quality stems is encouraged. Follow up burns may be necessary to eliminate excess regeneration and rejuvenate grass and shrub species such as Saskatoon and ceanothus. Treat noxious weeds to discourage invasion. Seed roads and landings with native seed if available to discourage noxious weed invasion and restore forage productivity.	Range stewardship plans and range use plans must be consistent with regulations and should set grazing rotations that maintain health and vigour of climax grasses, and leave late season growth for winter use by ungulates.
Managed Forest (Dry)	Where considered compatible with regeneration objectives, promote grass and shrub species.	Irregular cover edges along openings are preferred by most ungulates. Use varied wildlife tree retention configurations with patches and scattered single trees. Fd and Sx are preferred cover tree species. Retain cover along ridges and knolls, adjacent to forage areas and near riparian zones and seeps where possible.	Juvenile spacing helps to extend forage production. Irregular spacing helps to extend forage production. Slashing decadent shrub species helps to rejuvenate them. Treat noxious weeds to reduce invasion. Cut some deciduous stems to promote suckering.	Range stewardship plans and range use plans must be consistent with regulations and should set grazing rotations that maintain health and vigour of climax grasses, and leave late season growth for winter use by ungulates.
Managed Forest (Transitional)				
Managed Forest (Mesic)				
Managed Forest (Moist)				
Managed Forest (Wet)				
Riparian, Deciduous, Shrublands	Promote dogwood, willow and other ungulate forage species.	Retain or promote stands and scattered clumps of coniferous trees among and adjacent to deciduous and shrub dominated vegetation types. Favour Sx, Cw and Act.	Some coniferous removal, particularly Pl, from riparian habitat is acceptable to promote shrub production.	Maintain natural or create artificial barriers to avoid disruption of riparian habitats by livestock. Select watering sites with minimal soil and vegetation sensitivity.
Avalanche Tracks	Maintained by natural processes.	Retain wildlife tree patches and other cover [illegible] adjacent to avalanche tracks.	On high and moderate rated avalanche tracks, retain forest within track complexes and 50m of cover outside of complexes. Retain 100m of [illegible] adjacent to both sides of isolated tracks.	N/A
Alpine/ Subalpine	N/A	N/A	N/A	N/A
Alpine Grasslands	N/A	N/A	N/A	N/A

Table F. Recommended Landscape Level Site Series Management Objectives for East Kootenay Ungulate Winter Range.

Suggested minimum management unit size is 2 hectares. The split in MSdk 03/01/04/05 is based on MSdk area used by elk and mule deer

BEC Subzone Variant	4 Steps Dryer/ Poorer	3 Steps Dryer/ Poorer	2 Steps Dryer/ Poorer	1 Step Dryer/ Poorer	Zonal	1 Step Wetter/ Richer	2 Steps Wetter/ Richer	3 Steps Wetter/ Richer	4 Steps Wetter/ Richer	5 Steps Wetter/ Richer
PPdh2			02a	02b	01	03	04	Wetland/ Riparian		
IDFdm2, un			02	03	01 W, &N<1000m 01 C, &N >1000m	04	05	06	07	
IDFdm2a (un2)		02	03 Fd* 03 *	04	01	05	06	07		
MSdk		02	03 Fd* 03 *	04 elk, deer	01 elk, deer	05 elk, deer	06	07		
			03 *	04 moose	01 moose	05 moose				
ICHdw		Rock Talus	02	01a	01b	03	04	Wetland/ Riparian		
ICHdm			02	03* Fd* 03 Non-Fd	01	04	05	Wetland/ Riparian		
ICHmk1	Rock Talus	02	03	04	01	05	06	07	08	
ESSFdm1		Rock Talus	02	03/04	01	05	06	Wetland/ Riparian		
ESSFdm2		Rock Talus	02	03 *	01	04	05	Wetland Riparian		
ESSFdk	Rock Talus	02	03	04	01	05	06	07		
ICHmw1	Rock Talus	02	03	04	01	05	06	07		
ESSFmm1	Rock Talus	02	03	04	01	05	06	07		
ESSFwm		Rock Talus	02	03	01	04	Wetland Riparian			
ICHwk1			02	04	01	05	06	07	08	09
ICHvk1		02	03	04	01	05	06	Wetland Riparian		
ESSFwc2	02	03	04	05	01	06	07	08	09	Wetland Riparian
ESSFvc		Rock Talus	02	03	01	04	05	06		

C: Cool aspects, N: Neutral aspects, W: Warm aspects, Fd: Douglas-fir leading stands. Numbers refer to the site series in each variant

* Manage as Open Forest where stands have more than 150 stems/ha of Douglas-fir over 30cm dbh at time of harvest. If less, manage as Managed Forest

Habitat Type	Open Range	Open Forest	Managed Forest Dry	Managed Forest Transitional	Managed. Forest Mesic	Managed Forest Moist	Managed Forest Wet	Shrublands

Appendix 9.0 Water Inventory and Water Allocation Strategy

i) Water Inventory:

Water Licensing

- There are 277 water licenses within the SRMMP and resource evaluation areas.
- 160 of these are in the plan area or on streams originating in the plan area.
- The number of licensed streams in or originating in the plan area is 89.
- The 160 water licenses associated with the plan area are approximately distributed as follows:

Domestic	95
Waterworks	6
Enterprise	6
Irrigation	36
Stock watering	8
Land improvement	1
Coal washing	1
Power residential	2
Watering	1
Conservation	2

- The 117 water licenses on streams outside of the plan area but still within the resource evaluation area are approximately distributed as follows:

Domestic	17
Enterprise	3
Waterworks	1
Irrigation	8
Fire protection	1
Power	1
Watering	1
Various industrial mining purposes	81

Community Watersheds

There are 4 community watersheds (designated under the Forest Practices Code) in the plan area and none in the evaluation area. These are:

- Boivin Creek – 5864 ha.
- Cummings Creek – 12,287 ha.
- Fairy Creek – 2369 ha.
- Boardman Creek – 215 ha.

Completed Watershed Assessments

There have been 2 watershed assessments completed in the plan area:

- Bighorn Creek
- Cabin Creek

Alluvial Fan Hazard Areas

There are 9 hazard areas which have been mapped by Water, Land and Air Protection. Three of these are in the resource evaluation area. The 6 hazard areas within the plan area are on Boivin Creek, Brule Creek, Cummings Creek and Burton Creek. Only Burton Creek is not a community or domestic watershed and therefore without some sort of forestry assessment.

ii) Water Allocation Strategy:

A Water Allocation Strategy will be developed for the Plan area that:

- Enables greater efficiency in water licensing and regulation decisions under the *Water Act* and reduces conflict around water use decisions
- Addresses instream flows for fish, fish habitat and aquatic ecosystems. Consideration will be given to retaining a minimum base flow of 10% of mean annual discharge or a more appropriate measurement based on further analysis and local conditions
- Enhances economic opportunities by identifying where water is available for licensing
- Addresses water conservation opportunities and opportunities to "return water to the stream" where existing licensing threatens base flows
- Compiles a complete inventory of water licensing in the plan area which can be manipulated by a variety of parameters
- Identifies major issues by contacting fisheries, RDEK, Health etc.
- Applies a categorization system which includes social and environmental factors and creates categories of stream
- Develops water licensing "rules" for each stream category

SOUTHERN ROCKY MOUNTAIN MANAGEMENT PLAN

APPENDIX 10.0

ORIGINAL SRMMP ANNOUNCEMENTS

▪Ministry Home
▪Government of British Columbia
Kootenay Region
Ministry of Sustainable Resource Management

The Minister | News | Search | Reports & Publications | Home | Contacts

Contents

- News Release - August 28, 2003
- News Release - November 15, 2001
- Backgrounder - November 15, 2001
- News Release - February 17, 2003

- Return to SRMMP Home Page

Press Releases

▪Top ▪Copyright ▪Disclaimer ▪Privacy ▪Government of British Columbia

W3C HTML 4.01 ✓

BRITISH
COLUMBIA

NEWS RELEASE

For Immediate Release
2003SRM0018-000777
Aug. 28, 2003

Ministry of Sustainable Resource Management

SOUTHERN ROCKIES PLAN SUPPORTS GROWTH AND CONSERVATION

FERNIE – The Southern Rocky Mountain Management Plan provides increased certainty for both resource development and conservation in an area that is renowned for the diversity and quality of recreational opportunities and wildlife habitat, Minister of Sustainable Resource Management Stan Hagen said in releasing the plan today.

"The plan recognizes the importance of diversifying and growing the local and provincial economy while protecting the environment," said Hagen. "The different users – from industry to recreationists to conservationists – have been consulted and we will continue to work with them as we get this plan underway."

"Addressing the needs of resource-based communities in the Heartlands, such as jobs, is a government priority and this plan provides clear guidance to enable timber harvesting, mineral exploration and commercial backcountry developments," said Hagen.

"I am really proud of the dozens of local stakeholders who gave up their weekends to put this made-in-the-Kootenays plan together," East Kootenay MLA Bill Bennett said. "Because of the hard work of my constituents, the plan finds that elusive but important balance between a strong economy, respect for communities and protection of the unique habitats and environmental values of our beautiful region."

"Having participated in the development of the plan, we recognize the complexity and diversity involved," said Lloyd Havens, general manager Kootenay East Region, Tembec Industries Inc. "This plan provides consistent planning direction and certainty for a sustainable level of harvest that will help us achieve our long-term objectives for environmental certification."

"I'm supportive of the concept of land-use planning and optimistic that the Southern Rocky Mountain Management Plan will protect the wilderness values in the Wigwam and Flathead River valleys," said George Wilson, chair of the Access Committee of the East Kootenay Wildlife Association, a member club of the B.C. Wildlife Federation.

The draft plan was released for public input in February and was discussed at open houses in the area. Ministry staff consulted with the Ktunaxa Nation, which includes the Kinbasket peoples, during the planning process, and the plan is subject to continued work to accommodate Ktunaxa interests and concerns. This plan neither limits nor intends to limit ongoing treaty negotiations.

The plan area takes in parts of four major watersheds: the Flathead and Wigwam River watersheds, the east half of the Bull River watershed and the west half of the Elk River watershed and covers 362,819 hectares.

The ministry will chair an advisory committee comprised of representatives from various government agencies, First Nations and stakeholders to facilitate plan implementation, monitoring and refinements.

The plan is available online at www.gov.bc.ca/srm under Resource Management, then Kootenay Region and Southern Rocky Mountain Management Plan.

Media contact:	Tamara Armstrong Communications Officer 250 387-9147	Ken Gorsline Regional Director, Strategic Planning 250 354-6350

Visit the province's Web site at www.gov.bc.ca for online information and services.

• Division Home
• Government of British Columbia
News Releases
Ministry of Sustainable Resource Management
Home
News
Search
Reports & Publications
Contacts

For Immediate Release

Ministry of Sustainable Resource Management
Resource Management Division

November 15, 2001

REVIEW LEADS TO STREAMLINED LAND-USE PLANNING

VICTORIA - Government has concluded its review of three land-use decisions made by the previous government and is moving to complete the plans with a more focused, streamlined planning process, Sustainable Resource Management Minister Stan Hagen said today.

"We committed during the election to reviewing these draft land-use plans to ensure thorough socio-economic analysis was conducted and community input was properly addressed," Hagen said. "The draft land-use plans in the Central Coast, Lillooet and southern Rocky Mountains were rushed through days before the election and were in varying stages of completion.

"A new approach is needed to conclude these plans fairly and efficiently, in a way that revitalizes economic growth while providing strong, sustainable management. This will include a stronger leadership role for government and a more efficient process that better reflects the needs of our communities, including First Nations, as well as other key interests."

In the Central Coast, the land and resource management planning process has been streamlined to conclude a land-use plan for the region by spring 2003. The planning table will reconvene early next month.

In Lillooet, the planning will move to a process of consultative collaboration, with an effort led by ministry staff to reach an agreement with key interests by March 2002. If agreement cannot be reached, ministry staff will present a draft land-use plan to the minister.

In the southern Rockies, a new, consultative process will be started to enhance sustainable economic development by balancing resource, tourism, recreation and wildlife uses in this unique area.

"These new processes further our New Era commitment to adopt a scientifically based, principled approach to environmental management that ensures sustainability, accountability and responsibility," Hagen said. "As we move forward, I would encourage participants to continue their involvement and renew their efforts to work together to achieve long-term solutions."

-30-

Land Use Planning Backgrounder - November 15, 2001

For more information on:

Central Coast

Lillooet

Southern Rocky Mountains (Kootenays)

North Coast

Queen Charlotte Islands

Contact: Steve Weatherbe
Communications Officer
250 387-1705

• Top • Copyright • Disclaimer • Privacy • Feedback

• Ministry Home • Government of British Columbia

Kootenay Region

Ministry of Sustainable Resource Management

MSRM Home > Resource Management Division > Kootenay-Boundary Regional Land Use Plan

November 2001 Ministry of Sustainable Resource Management

SOUTHERN ROCKY MOUNTAIN MANAGEMENT PLAN

Review/Decision

The government has concluded that the previous government's decision on the Southern Rocky Mountains conservation area failed to balance environmental issues with the needs of the people in the East Kootenay region. The process used to establish the conservation area was secretive and lacked transparency and involvement of all interests. As a result, the conservation area order-in-council will be rescinded.

Sustainable Resource Management Minister Stan Hagen and and East Kootenay MLA Bill Bennett toured the area and met with key interests to discuss this and other resource management issues. These discussions and analysis of plans in the region showed general agreement on importance of protecting wildlife and habitat, along with economic considerations facing the region. Government has concluded that a Southern Rocky Mountain management plan should be completed by spring 2002 to address key resource management issues.

This renewed process will be led by government and will involve collaborative input and advice from all interests in the region.

Planning Process

- The Southern Rocky Mountain management plan is a renewed process that will be open and will welcome input and advice from those in the region.
- The planning process will make sure consultation and planning is effective, streamlined and inclusive.
- The plan will recognize all resource values and will enhance sustainable economic development by balancing resource, tourism, recreation, and wildlife uses of this unique tract of wilderness
- The government will consult with stakeholders through meetings and workshops to begin this month and will complete the management plan by spring 2002.

Management Plan

- The Southern Rocky Mountain management planwill provide direction for multiple resource use and recreation access while maintaining key wildlife and habitat.
- Specifically, the plan will:
    - Identify and maintain key conservation.
    - Work on recreation and access management.
    - Identify old growth management areas.
    - Confirm mineral, coal, oil and gas interests and opportunities
    - Refine direction from the Kootenay-Boundary land use implementation strategy
- The plan will provide a connection between Height of the Rockies Provincial Park and Waterton Lakes National Park.
- The plan will provide the basis for consistent decision-making in the areaby guiding future tenures and permits in the plan area.

Plan area

The area encompasses about 350,000 hectares from the B.C.-Montana border, north through the Flathead watershed and portions of the Wigwam, Elk, and Bull River watersheds to the southern boundary of Heights of the Rockies Provincial Park.

Proposal to Expanded Waterton Lakes National Park into the Flathead Valley

As many residents of the East Kootenays are aware, a proposal that the Waterton Lakes National Park be expanded to include parts of the Flathead Valley has been under discussion with the federal government, Tembec, the Canadian Parks and Wilderness Society and a group of charitable foundations. To ensure consistency and to eliminate duplication of consultative activities, the provincial government will work with Parks Canada to make sure any process for evaluating social, economic and environmental impacts, along with local support for this proposal, is co-ordinated with the Southern Rocky Mountain management planning process.

Resource Values

- The area has one of the highest diversities and densities of large mammal species on the continent and is home to several endangered and vulnerable species. The area supports eight species of large carnivores including grizzly and black bears, along with large ungulates like elk and mountain goats.
- Water quality and fisheries resources in the area are transboundary concerns.
- Tourism is a growth industry with economic opportunity in the Kootenays. The Southern Rocky Mountain area is attractive for tourism development and backcountry recreation.
- Most of the planning area contains deposits of natural gas, and the southern (Flathead) portion has moderate to high deposits of oil. Phosphate rock, gold and copper have been found in the Flathead drainage, and diamond-bearing rock is found near Elkford. There are coal deposits in several places in the Flathead drainage, and potential for coal bed methane is associated with most of these.
- Timber management, harvesting and milling sustains jobs in the Elk Valley.

-30-

Contact: Ken Gorsline
Manager, Strategic Planning
Kootenay Region
250 354-6333

For more information on the Ministry of Sustainable Resource Management, visit our Web site at http://www.gov.bc.ca/srm.

This page was last modified: February 17, 2004

• Ministry Home
• Government of British Columbia
Kootenay Region
Ministry of Sustainable Resource Management

MSRM Home > Resource Management Division > Kootenay-Boundary Regional Land Use Plan

For Immediate Release
2003SRM0003-000164
Feb. 17, 2003

Ministry of Sustainable Resource Management

DRAFT SOUTHERN ROCKIES PLAN RELEASED FOR PUBLIC COMMENT

VICTORIA – A draft plan for managing Crown lands and resources in the southern Rocky Mountains has been released for public response, Minister of Sustainable Resource Management Stan Hagen announced today.

"Over the past decade, increasing demands on the land base in the southern Rockies have led to uncertainty and conflict," said Hagen. "We believe this draft plan moves us very close to what everyone wants: the best possible plan for certainty on the land base, and management of our precious natural resource for the best balance of economic, social and wildlife values."

"Our government is confident that this plan will let the different users – from industries to recreationists – know exactly where they may conduct their activities to eliminate or reduce conflict, support job-creating industry and sustain habitat for wildlife," added Hagen. "This is an example of our commitment to help smaller communities open up new opportunities for economic growth as reflected in the Heartlands Economic Strategy announced recently by the Premier."

East Kootenay MLA Bill Bennett praised the efforts of regional interest groups in providing input into the plan. "More than 40 groups from the Elk Valley volunteered their time over the 11-month planning process. Now we invite these dedicated people and the public at large to help make the final plan even better," Bennett said.

The draft southern Rocky Mountain management plan moves beyond earlier plans to a more detailed level with which government resource managers can improve day-to-day decisions. It covers an area of 440,569 hectares, including parts of the Elk, Flathead, Bull and Wigwam watersheds.

Ministry staff has consulted the Ktunaxa Nation, which includes Kinbasket peoples, during the planning process, and consultations continue. This plan neither limits nor intends to limit ongoing treaty negotiations.

Open houses for the public are scheduled for Feb. 24, 25, and 26 in Cranbrook, Fernie and Elkford respectively. Details are being advertised locally.

Copies of the draft plan are available on the ministry's homepage at www.gov.bc.ca/srm/ – click on Resource Management under Programs & Services and then Kootenay Region under General Links. Copies are available at the ministry's office at 205 Industrial Rd. G, Cranbrook

-30-

Contact:

Graham Currie
Communications Director
250 356-2862

Tom Volkers
Senior Planner, East Kootenay
250 426-1731

This page was last modified: February 17, 2004

SOUTHERN ROCKY MOUNTAIN MANAGEMENT PLAN
APPENDIX 11.0
TERMS OF REFERENCE
Revised September 15, 2002

Background

Due to its high natural resource values, the Southern Rocky Mountain area has attracted much attention. It is felt that additional resource management direction is required to adequately balance social, economic and environmental values.

The area comprises a largely undeveloped and relatively intact ecosystem that links the Canada-USA border through the Flathead, Bull, Wigwam and Elk River watersheds, and supports diverse and abundant wildlife. Other values in the area include: fisheries resources and water quality; tourism development and backcountry recreation activities; sub surface resources including minerals, coal, and petroleum resources; and timber harvesting.

The Southern Rocky Mountain Management Plan land use planning process is to ensure economic prosperity, environmental quality and social equity. The intent is to stimulate the resource based economy; maintain areas of unique habitat and environmental value and consider the needs of local residents.

Purpose

Through a consultation and planning process, provide government with recommendations for resource management of the Provincial Crown land area to be covered by the Southern Rocky Mountain Management Plan.

The Southern Rocky Mountain Management Plan (SRMMP) will take a balanced approach to encourage sustainable economic development and ensure that key conservation values are protected and maintained within the Southern Rocky Mountain Management Plan area. The plan will provide the basis for consistent decision-making in the area and will guide future tenures and permits in the plan area.

Within this area, the SRMMP is expected to address implementation of the Kootenay Boundary Higher Level Plan Order ("KBHLP"), refine and clarify the Kootenay Boundary Land Use Plan Implementation Strategy ("KBLUP-IS"), address gaps in the KBHLP and KBLUP-IS, and clarify strategic planning direction arising from the Forest Practices Code ("FPC").

Plan Area

The area extends from the B.C./Montana border north through the Flathead and Wigwam watersheds and portions of the Elk and Bull River watersheds to the southern boundary of Heights of the Rockies Provincial Park. All federal lands, private lands, and Provincial Parks are excluded.

More specifically, the area covered by the plan includes all non-park provincial Crown land along the eastern slopes of the Bull River drainage, the western slopes of the Elk Valley south of Height of the Rockies Provincial Park, the Sand Creek drainage, and the Canadian portion of the Wigwam River and Flathead River drainages.

Process and Timelines:

The planning process is intended to be technically driven based on available resource inventories, research information, and information gained through public consultation. The information gained from the various public consultation activities will be critical to the success and quality of the planning process and products. The public consultation and planning principles are: to establish constructive dialogue with the public and participants, to conduct an open and transparent process where all interests are considered, and to undertake a credible process with no predetermined outcome.

Much background inventory work has been done already. Colour themed inventory maps for a variety of resources have been prepared. A timber supply review was completed in 2000. Other inventory and research projects are still in progress.

On December 6, 2001 there was an open house and public meeting in Fernie to start the public consultation and planning process. A summary of input from this meeting is found at **LINK**

A background report describing values and resources has been produced and is found at **LINK.**

Technical GIS work will be undertaken to support the planning process.

Focus group sessions will be conducted in March and April 2002. A summary list of issues from the Focus Group sessions is found at **LINK**

From May to December, 2002 the project team will work to produce a draft management plan with recommendations.

In September 2002, an Update meeting will provide a progress report including technical work completed, to participants and others interested in the process.

In October 2002, an open house will be held to review the draft guidelines. These will then be revised based on public and participant input received.

In December 2002, the draft management plan will be submitted to government for consideration and release for public review in 2003.

Roles and Responsibilities

The process of developing a management plan for the area will be led by the Ministry of Sustainable Resource Management. A list of team members is found on the web site.

An interagency liaison group has been established to provide active input to development of the management plan. Participation will be requested from First Nations and various government ministries and agencies.

Deliverables:

The following deliverables will be produced by 2003:

- public input summary report and Focus Group issues list
- background report
- socio-economic analysis
- draft management plan

The Southern Rocky Mountain Management Plan will provide direction for multiple resource use and recreation access while maintaining key wildlife and habitat.

Linkages to Other Planning Processes

Kootenay Boundary Higher Level Plan order (KBHLP): The SRMMP will be consistent with the direction contained in the Kootenay Boundary Higher Level Plan order. If the KBHLP is amended, then the SRMMP will be adjusted accordingly to ensure that it remains consistent with the KBHLP order.

Recreation Management Strategy (RMS): The SRMMP will incorporate the direction for recreational access management (public and commercial) that is developed through the Recreation Management Strategy process. Whenever possible, to ensure complete communication of information and integration of results, at least one member of the SRMMP project team will attend public meetings, participant workshops, and individual interviews held as part of the RMS planning process. Concurrent with the RMS process, a pilot project on recreational carrying capacity is being conducted for a portion of the SRMMP area. This pilot project will provide additional information for use in both the RMS and SRMMP planning processes

Phase 1 Landscape Unit Planning (OGMA's and WTR): The SRMMP will include management objectives for old growth management areas (OGMA's) and wildlife tree retention (WTR) based on the phase 1 landscape unit planning work that has been completed to date and the information gained from the consultation process.

Trans Canada Trail: The routing of the Trans-Canada Trail (TCT) is being developed through a separate existing planning process. In preparing the SRMMP, care will be taken to account for any proposed locations for the TCT.

National Park Proposal: The review process for the Canadian Parks and Wilderness Society's national park proposal for a portion of the Flathead Valley is being conducted by Parks Canada.

The Southern Rocky Mountain Management Plan (SRMMP) will be developed to indicate the management direction and strategy that will be applied to that portion of the Flathead Valley if it remains within provincial jurisdiction. If a national park is created by political decision between the federal Government of Canada and the provincial Government of British Columbia, then the Southern Rocky Mountain Management Plan will need to be reviewed in light of this change in land status and amended accordingly as necessary.

Ungulate Winter Range Guidelines (UWR): As revised ungulate winter range guidelines and improved resource inventory information become available from the UWR committee, they will be used either in preparing the SRMMP or in updating/revising the SRMMP dependent upon when the information becomes available.

SOUTHERN ROCKY MOUNTAIN MANAGEMENT PLAN

Appendix 12.0

BACKGROUND REPORT

May 7th, 2002

(Revised September 15, 2002)

Appendix12 Backgroundrpt v05.doc

TABLE OF CONTENTS

Page

1. BACKGROUND ON THE SRMMP
   1.1 History 1
   1.2 Purpose 1
   1.3 Plan Area 1
   1.4 Approach 2
   1.5 Guiding Principles 2
   1.6 Planning Process and Timelines 3

2. DESCRIPTION OF VALUES AND RESOURCES
   2.1 Fish and Wildlife
      2.1.1 Wildlife 3
      2.1.2 Wildlife Habitat 4
      2.1.3 Fire Maintained Ecosystem Restoration 4
      2.1.4 Endangered and Threatened Species 4
      2.1.5 Fisheries 5
   2.2 Water Resources 5
   2.3 Subsurface Resources
      2.3.1 Geological Setting 6
      2.3.2 Coal 6
      2.3.3 Coalbed Methane 7
      2.3.4 Minerals 7
      2.3.5 Oil and Natural Gas 8
   2.4 Timber Resources 8
   2.5 Scenic Areas 9
   2.6 Settlement
      2.6.1 Transportation and Utility Corridors 10
      2.6.2 Communities 10
   2.7 Agriculture
      2.7.1 Existing Uses 11
      2.7.2 Agricultural Land Reserve 11
   2.8 Heritage and Culture
      2.8.1 First Nations History, Traditional Uses and Treaty Process 12
      2.8.2 Pre-Contact Archaeological and Traditional use Sites 12
      2.8.3 Post Contact Archaeological/Heritage Sites 13
   2.9 Tourism and Recreation 13

3. PROJECT TEAM AND DELIVERABLES
   3.1 Project Team 14
   3.2 Key Deliverables 14

APPENDICES

1. Background on the Southern Rocky Mountain Management Plan

1.1 History

In November of 2001, the B.C. government decided to rescind the Environment and Land Use Act Order-In-Council that created the former Southern Rocky Mountain Conservation Area covering parts of the Flathead, Wigwam, Bull and Elk River valleys in the southeast corner of the province. The Kootenay Region of the Ministry of Sustainable Resource Management was directed to proceed with the development of a Southern Rocky Mountain Management Plan ("SRMMP") with a new focus for management and planning in the Southern Rocky Mountain area. The SRMMP will cover a larger area than the previous Conservation Area, and this renewed process will be led by government, will follow tight timelines, and will pivot on collaborative input and advice from interests in the region rather than consensus through planning tables. The entire area is part of the treaty negotiation process with the Ktunaxa-Kinbasket Tribal Council

1.2 Purpose

Through a public input and planning process, and without prejudice to the current treaty negotiation process, the Southern Rocky Mountain Management Plan is intended to provide government with refined management direction for land and resources within the SRMMP area. The plan will provide the basis for consistent decision-making and guidance of future tenures and permits in the plan area.

1.3 Plan Area

The SRMMP area covers the southeast portion of the East Kootenays and extends from the B.C./Montana border north through the Flathead and Wigwam watersheds and portions of the Elk and Bull River watersheds to the southern boundary of Heights of the Rockies Provincial Park. All federal lands, private lands, and Provincial Parks are excluded.

More specifically, the area covered by the plan includes all non-park provincial Crown land along the eastern slopes of the Bull River drainage, the western slopes of the Elk Valley south of the Height of the Rockies Provincial Park, the Sand Creek drainage, and the Canadian portion of the Wigwam River and Flathead River drainages.

The SRMMP area comprises a largely undeveloped and relatively intact ecosystem that links the Canada-USA border through the Flathead, Bull, Wigwam and Elk River watersheds, and supports diverse and abundant wildlife. Other values in the area include: fisheries and water, tourism development and backcountry recreation activities, subsurface resources including minerals, coal, and petroleum resources, and timber harvesting.

For resource evaluation purposes, a larger area than the SRMMP area is being considered in order to undertake a scientifically based process which works on the premise of ecosystem management. This "Resource Evaluation Area" has a total area of

754,463 ha, covers approximately one half of the Cranbrook Forest District, and encompasses 16 landscape units compared to the SRMMP area which has a total area of 440,614 ha within 10 landscape units.

Table 1: Summary of Planning Area

	Landscape Units	Total Area (ha)	Timber Harvesting Land Base (ha)	Area not owned or administered by B.C. (ha)
SRMMP Area	C14-C18, C23-C26, part of C27, planning cells T490 in C34, and T555 & T560 in C13	440,614	78,179	68,386
Resource Evaluation Area	14 -28, 38, planning cells T490, T555, T560	754,463	114,593	149,679

Source: Cranbrook Forest District PCRS Reports by Landscape Unit

1.4 Approach

The SRMMP will:

- take a balanced approach to encourage sustainable economic development and ensure that key conservation values are protected and maintained within the SRMMP area;
- provide the basis for consistent decision-making in the area and will guide future tenures and permits in the plan area; encompass social, economic and environmental issues and enable the opportunity for a broad range of participation from all relevant sectors;
- refine and clarify the Kootenay Boundary Land Use Plan Implementation Strategy;
- clarify strategic planning direction arising from the Forest Practices Code (FPC); and
- implement the Kootenay Boundary Higher Level Plan Order .

1.5 Guiding Principles

- Build public and sectoral awareness and support for the Southern Rocky Mountain Management Plan process and the plan itself.
- A process that is open and welcoming of input and advice from local participants and sectors
- Create land use certainty for all relevant sectors and residents in the SRMMP area.
- A science-based land use plan that ensures sustainability, accountability and responsibility, and balances the need for economic development with the need to protect ecosystems.
- Build upon the existing policy and land use direction that exists in the region (i.e. Kootenay Boundary Land Use Plan Implementation Strategy, Forest Practices Code, Kootenay-Boundary Higher Level Plan).

- Respect existing tenures and rights in the plan area.
- The process and plan is without prejudice to the current treaty negotiation process.
- Create a plan that provides "one-stop shopping" for land use direction which is clear, easy to implement and minimizes regulatory compliance needs.
- Provide more specific direction for land allocation and management.

1.6 Planning Process and Timelines

The planning process is intended to be technically driven based on available resource inventories, research information, and information gained through public consultation. The information gained from the various public consultation activities will be critical to the success and quality of the planning process and products. The public consultation and planning principles are: to establish constructive dialogue with the public and relevant sectors, to conduct an open and transparent process where all interests are considered, and to undertake a credible process with no predetermined outcome.

The planning process was initiated in November 2001 with an Open House and Public meeting held in Fernie in December 2001. Focus Group sessions were conducted throughout March and April, and draft guidelines will be presented for review at an Open House in October 2002 and revised as necessary. A final draft will be submitted to the Deputy Minister in December 2002 and released for public review in 2003.

This first planning phase of the SRMMP addresses a number of tasks and activities that cannot be accomplished within the plan timeframe, yet which should be addressed to achieve a comprehensive land use plan. A workplan to complete a Phase 2 will be part of the final document.

A Recreation Management Strategy and a Recreation Carrying Capacity Pilot are taking place concurrently with the SRMMP process, are being coordinated, and results will be incorporated into the SRMMP. The intent is to have one final plan for the area.

2. DESCRIPTION OF VALUES AND RESOURCES

2.1 Fish and Wildlife

2.1.1 Wildlife

The East Kootenay region is internationally renowned for its spectacular abundance and diversity of wildlife. In addition to the biological and aesthetic value of East Kootenay wildlife, many species have significant economic value for hunting, trapping and wildlife viewing.

The landscape within the SRMMP area is one of those increasingly rare areas that has retained a high degree of ecological integrity and processes. As a consequence, the species diversity of large mammals in the Southern Rocky Mountains has managed to remain among the highest on the continent. This phenomenon exists in part because large tracts of land remain relatively isolated, undeveloped and unpopulated.

Carnivores: The plan area supports populations of eight species of large carnivores: black bear, grizzly bear, bobcat, lynx, cougar, coyote, wolf, wolverine as well as small fur-bearers, fisher, martin, greater and least weasel and badger.

The Flathead watershed, within the planning area, is reputed to support the highest density of non-coastal grizzly bears in North America[1]. The watershed functions as the centre of the linkage between the Northern Continental Divide ecosystem population in the United States and contiguous populations of grizzlies in Canada, and as a recruitment source for Alberta, the state of Montana and adjacent watersheds in British Columbia.

Ungulates: The plan area supports six species of ungulates: elk, mountain goat, moose, mule deer, white-tailed deer and Rocky Mountain bighorn sheep. The populations of Rocky Mountain Bighorn sheep, mountain goat, mule deer, elk and moose are considered to be of international and regional significance.

2.1.2 Wildlife Habitat

The East Kootenay is internationally renowned for its impressive abundance and diversity of wildlife. This can be attributed largely to the areas' inherent complexity of ecological systems and connectivity with both the Great Plains in Alberta and the intermountain region of the United States. The relatively intact connective linkage that extends south from the source of the Elk River watershed through the Flathead River watershed and across the Canada-U.S. border into the state of Montana makes the SRMMP area valuable for many species.

2.1.3 Fire Maintained Ecosystem Restoration

Fire maintained ecosystems are represented on the west side of the Wigwam and Elk Rivers, along the southwest boundary of the SRMMP area. Managing to restore the desired open stand structure and high forage values was first initiated on Wigwam Flats and Sheep Mountain. These restoration activities have been ongoing since the 1970's and include logging, thinning, slashing and prescribed burning. Activities to control noxious weeds are part of the restoration.

2.1.4. Endangered and Threatened species (Red/Blue listed)

There are 104 species of vascular plants and 32 species of vertebrates in the Cranbrook Forest District that are Red- or Blue-Listed. Of the vertebrates, at least 14 may be found in the SRMMP area. These include Grizzly bear, Rocky Mountain bighorn sheep, Williamson's sapsucker, Fisher, Wolverine, Badger, Red-tailed chipmunk, Least chipmunk, Southern Red-backed vole, Tailed frog, Mottled sculpin, Westslope Cutthroat trout and Bull trout. While Mountain goat are not endangered or threatened in this area, they are a species of special concern because of their sensitivity to habitat and human disturbance. A full report of Red- and Blue-Listed vertebrate and vascular plant species in the Cranbrook Forest District and in the SRMMP area is found at .

---

[1] McLellan 1989a

2.1.5 Fisheries

The most common native fish in the SRMMP area are Bull trout, westslope cutthroat trout, mountain whitefish, mottled sculpin, slimy sculpin and large-scale sucker. Streams in the Flathead, Elk, Bull and Wigwam watersheds provide important spawning and rearing habitats for these species.

Bull trout, the largest indigenous fish in the area, is a blue-listed species in British Columbia and an endangered species in the neighbouring American jurisdictions. The Wigwam River, through intensive management, is the most important Bull trout spawning stream known throughout their range.[2]

2.2 Water Resources

The Elk and Flathead River basins, and portions of the Bull River basin are included in the SRMMP area and the resource management area.

The Elk River has its headwaters in the Front Ranges and flows south and southwest for about 185 km to its confluence with the Kootenay River, draining an area of about 4450 sq.km. The three major tributaries of the Elk are the Wigwam, Fording River and Michel Creek. At Fernie, the Elk R.[3] has a mean annual discharge of 1,470,000 dam^3 with a daily maximum of 642 m^3/s and daily minimum of 5.80 m^3/s. There is only one major dam on the Elk R. just downstream from Elko. Four community and 47 domestic watersheds are located in the Elk River basin.

The eastern portion of the Bull River basin forms part of the SRMMP area. Major tributaries on the east side of the Bull include Narboe, Iron and Sulphur Creeks. There are 2 domestic watersheds on this system. A BC Hydro dam is located at the southern end of the Bull River. Regulated measurements[4] of mean annual discharge, daily maximum and minimum are 1,040,000 dam^3, 388 m^3/s, and .820 m^3/s respectively.

The Flathead River basin drains an area of about 1110 sq km between its headwaters and the B.C.-Montana border. The river flows south and southeast for about 60 km. to the border at an elevation of 1200 to 1500 m. Main tributaries to the southeast are Sage and Kishinena Creeks which join the Flathead River south of the border. Mean annual discharge[5] at the US border is 827,000 dam^3, while the maximum recorded is 413 m^3/s and minimum of 1.74 m^3/s. Three domestic watersheds are located in the Canadian Flathead River basin.

---

[2] S.G. Cannings and J. Ptolemy 1998.

[3] Water Survey of Canada (1990 data)

[4] Water Survey of Canada (1990 data)

[5] Water Survey of Canada (1990 data)

The Elk and Flathead Rivers and major tributaries are mostly high gradient and fast-flowing, their hydrographs dominated by spring freshets when discharge increases two to three fold over base flows. Wetlands and marshes are fairly rare and for that reason important for species dependent on these habitats. While most lakes in the plan area are alpine, headwater lakes, the SRMMP area also includes eight L1 lakes[6]. These are Snowshoe, Weber, Hunger, Marl, Beryl, Three Mile, Frozen and Proctor lakes. Proctor lake, the largest Crown-owned lowland lake in the southeast Rocky Mountains, is representative of lowland lakes in the area. Relatively undisturbed by human activity, 165.25 ha area of lake and upland was proposed in 1991 as an ecological reserve.

Climatic temperature extremes are an important determinant of fish habitat in the rivers. Winter air temperatures can drop to -40 degrees C resulting in considerable river ice accumulation and frazzle ice formation in faster flowing reaches. Ground water springs are common along the rivers throughout the SRMMP and are critical in the maintenance of ice-free winter refugia for fish.

The water chemistry of these systems is highly influenced by the limestone parent geology of the Rocky Mountains. The water is alkaline with a base-flow hardness of about 150 mg/L $CaCO3$ hardness and pH of about 8.5, which contrasts with that of the St. Mary River with a hardness of about 20 mg/L and pH of about 7.7. With the exception of Michel Creek, autotrophic (algal) production in these rivers is strongly phosphorus limited. Natural phosphorus-rich groundwater in upper Michel Creek causes seasonal nitrogen limitation for algae in this tributary. Anthropogenic channel disruptions and waste inputs are mainly associated with coal mining, logging, municipal development and cattle ranching.

2.3 Subsurface Resources

2.3.1 Geological Setting

The SRMMP area is in the Foreland Fold and Thrust Belt of the Canadian Cordillera, and is underlain for the most part by sedimentary rocks ranging from Precambrian to Tertiary in age. Small bodies of intrusive igneous rock occur locally. Average structural trend is roughly north-south. Dominant structures include the Lewis thrust fault, whose trace is exposed immediately east of the Alberta border.

2.3.2 Coal

Known coal deposits and resources belong to the Jurassic-Cretaceous Kootenay Group and occur where the Kootenay Group crops out or is buried under younger sedimentary rocks. Within the SRMMP area the most significant coal deposits are within the Flathead River drainage. Vast coal resources also occur in the Elk River drainage but are mainly outside (to the east of) the Plan area.

---

[6] Forest Practices Code - Operational Planning Regulations

Coals in the Plan area are bituminous in rank (predominantly medium-volatile) and are low in sulphur. They are very attractive for, and have widespread application to both thermal and metallurgical uses. International steel mills are the biggest consumers of coal from the Plan area.

Coal mining has a century-long history in southeast BC. There are five active open pit coal mines in the Elk Valley area (Fording River, Greenhills, Line Creek, Elkview and Coal Mountain, all outside the SRMMP area) and numerous other sites, such as Hosmer (in the SRMMP area), Coal Creek and Morrissey Creek (private land), where coal was mined in the past. The current most developed coal exploration property in the SRMMP area is the so-called Sage Creek deposit on Cabin Creek, but all known deposits have received some level of exploration.

Coal-bearing lands in the SRMMP area are covered by two land-use designations in the Kootenay-Boundary Land Use Plan. Most are in the Integrated Resource Management category, while some are in the Enhanced Resource Development (Coal) category.

The Kootenay Group is known to occur at great depth beneath the Lewis thrust fault in parts of the plan area, but these occurrences are considered to have only very long-term potential interest for resource extraction.

2.3.3 Coalbed Methane

Many of the areas where the Kootenay Group is at surface or buried beneath younger sedimentary rocks in southeast BC also have potential for coalbed methane occurrences. In the SRMMP area this mainly applies to coal-bearing lands in the Flathead River drainage.

Exploration for coalbed methane in the Fernie/Elk Valley area began in the late 1980's, although the gas-rich nature of some of the seams that were mined underground in the early days was well known. Activity so far has focused mainly on areas outside of the SRMMP area, although short test holes were drilled in the Lodgepole Creek area.There are no proven resources of coalbed methane in southeast BC, but the potential is considered to be very large.

2.3.4 Minerals

Given the complex geology it is not surprising that there is a wide range of mineral occurrence types and mineral potential in the SRMMP area. With the exception of building stone and aggregate materials, no economic deposits have been discovered to date. Some of the known occurrences are discussed below; they are in no particular order. Numerous copper (with and without silver) showings are found east of the Flathead River in Precambrian-age Purcell Supergroup strata (Grinnell Formation). Gold is known to occur in association with intrusive rocks in the Flathead Valley, most notably in the Howell-29 Mile creeks area and on Commerce Peak Phosphate rock occurs regionally at several horizons in the Paleozoic and Mesozoic stratigraphy, most notably at the base of the Jurassic Fernie Formation (a marine shale). Small intrusive rock bodies with unusual composition are found north of Elkford and in parts of the Bull River drainage. Some occur in pipe-like form, and some have been identified as kimberlite, the typical host rock for diamonds. Zinc showings are known to occur in the Bull River drainage, where they are associated with Paleozoic carbonate rocks. Limestones and dolomites are common in the plan area, as are other rocks with characteristics suitable for construction purposes. Sand and gravel deposits are found mainly in the valley bottoms.

The known mineral occurrences and areas of potential are mainly located in either Integrated or Special Management zones[7].

2.3.5 Oil and Natural Gas

Monahan[8] has summarized the geology and oil and gas potential in the Elk and Flathead drainages. He describes the area as being under explored with its prime targets being poorly tested to date. There are no petroleum reserves in the SRMMP area, but the area has significant potential given its geological setting and proximity to productive sites in Alberta., and a CO_2-rich natural gas resource is known to exist.

Oil and natural gas potential occurs in a variety of settings in the plan area .Faulted Paleozoic carbonate rocks situated below the Lewis thrust fault appear to be the most prospective targets, with suitable structural trends extending over considerable distances. These reservoirs are potentially gas-bearing (rather than oil) for the most part.

Areas with oil and gas potential in the SRMMP area occur in Enhanced, Integrated and Special Management zones[9].

2.4 Timber Resources

Timber harvesting for industrial purposes started with the construction of the railways into the East Kootenays in the mid-1800's. The Canadian Pacific Railway and the Great Northern Railway extended their lines into the Elk valley and Kootenay River valley to access timber, coal and mineral resources. As the 1800's came to a close, trees were harvested for railway ties and mining props, and then for the U.S. and prairie lumber markets. Mineral, oil and coal exploration in the early to mid 1900's, opened up initial road access into the Flathead and middle reaches of the Elk valley. The strong economy of the post-war period saw increasing demand for lumber. Gradually a number of small sawmills were consolidated and today continue to have a strong presence in the area as Tembec Inc.

Industrial forestry operations were initiated in the Flathead in the late 1960's, in an effort to salvage spruce bark beetle killed wood. Later in 1980 to 1982, a massive mountain pine beetle outbreak led to another timber salvage effort which resulted in the harvest of over 7500 ha in the Flathead valley alone. The pine beetle salvage operation, and further subsurface resource exploration in the late 1970's and early 1980's brought the current road infrastructure in the Flathead valley into existence.

---

[7] Kootenay Boundary Land Use Plan – Implementation Strategy

[8] MEM Petroleum Geology Special papers 2000/01 and 2001/02

[9] Kootenay Boundary Land Use Plan – Implementation Strategy

Present day forestry operators in the plan area are Tembec Industries Inc., Galloway Lumber Company Ltd., and the Small Business Forest Enterprise Program. Tembec's sawmill in Elko is the only large sawmill located in the area. Timber resources from the plan area are also used in local sawmills, pulp mills and specialty wood products facilities located outside the plan area (eg. in Jaffray and Skookumchuck). Harvesting is ongoing and continues to be planned for the area. Often harvesting in the Elk and Flathead valleys is directed to beetle control and salvage operations. All operations are carried out according to Higher Level Plan Objectives and the Forest Practices Code.

Dominant commercial tree species in the plan area are lodgepole pine, white spruce, Douglas-fir, western larch, sub-alpine fir, western red cedar, western hemlock and ponderosa pine.

As noted in the introduction, the total land base for the Southern Rocky Mountain Management Plan area is 440,614 ha. The area that is expected to be harvestable within the plan area is 78,179 ha or 18%.

The Resource Evaluation area contains 754,463 ha of which the timber harvesting land base is 114,579 ha or 15%..

2.5 Scenic Areas

Under the Kootenay Boundary Land Use Plan, the management objective established for front country scenic areas is to conserve the quality of views from communities, major waterways and major highways. This objective is legally enforceable through the Kootenay Boundary Higher Level Plan Order.

Front country scenic areas within the plan area include the Highway 3 corridor from Elko to the B.C.- Alberta border, and the Highway 43 corridor from Elkford to Sparwood. The Kootenay Boundary Land Use Plan Implementation Strategy (KBLUP-IS), identifies these scenic areas and defines visual management guidelines for designing timber harvest, forest management and mineral exploration activity.

Visually sensitive areas in the backcountry are managed according to KBLUP-IS backcountry recreation guidelines for resource development. Backcountry scenic resources are not mapped or identified specifically, rather they are defined as they relate to backcountry facilities and features. The guidelines state that any logging within 200m of a defined[10] campsite, cabin, lake, or river should be designed so that modification may be discernible but not clearly evident from the site. For tenured areas, resource development should show evidence of good visual design.

---

[10] For definition of backcountry facilities and features to which visual guidelines apply, see KBLUP-IS. Section 3.9.2 Operational Guidelines. Table 1.2 Management Guidelines for Backcountry Recreation. p 56.

2.6 Settlement

2.6.1 Transportation and Utility Corridors

Highway 3 and 43, and the Canadian Pacific Railway form the main transportation corridor running through the SRMMP area. Highway 3 and the Canadian Pacific Railway parallel the Elk River from Elko to Sparwood, where the rail line splits. At Sparwood, one rail line runs north to Elkford and the Fording River, Line Creek and Greenhills coal mines, and the other rail line travels southeast paralleling Highway 3 through the Crowsnest Pass, Alberta. At Sparwood, Highway 43 initiates and runs north to Elkford.

The Trans Canada natural gas pipeline enters the SRMMP area from the west, north of Sheep Mountain, continues north from the Wigwam River through the north and west Flathead to Sparwood, then east through Phillips Pass into Alberta. Subsidiary lines tap this line to service Elko, Fernie, and Sparwood.

The 500kV hydro transmission line passes through the plan area enroute to the Sparwood sub-station from Elko, northeast through the Flathead, then through Phillips Pass into Alberta. Lower voltage lines distribute power from the Sparwood sub-station to the local communities.

Other utility lines such as telephone, fiber, and hydro distribution, generally follow the transportation corridor.

2.6.2 Communities

The SRMMP area lies entirely within the Regional District of East Kootenay and is adjacent to the communities of Elko, Fernie, Sparwood and Elkford. Table 2 provides population statistics and the top three employment sectors for each community. Coal mining is the main employer in the Elk Valley, however in Fernie tourism is growing steadily with Fernie Alpine Resort attracting an increasing number of tourists to the area every year. Elko, a small community of about 500 is not included in the table because of its small size. Employment there is mostly provided by sawmill and forestry operations.

Table 2. Community Facts

Community	City of Fernie	District Municipality of Sparwood	District Municipality of Elkford
Area	1,655.5 ha	18,279.6 ha	10,525.9 ha
Incorporated	1904	1966	1971
Population (2001)	5,511	4,232	2,877
Top employers (% of population employed)	19% mining	28% mining	53% mining
	14% retail trade	10% retail trade	8% retail trade
	11% accomod., food+beverage	9% accomod., food+beverage	6% educational service

Source: BC Stats website (2001 population census; 1996 employment census)

2.7 Agriculture

2.7.1 Existing Uses

Beef cattle production is the main agricultural activity in the SRMMP area. Other agricultural uses are limited by the small amount of arable land and the short frost-free period. Access to Crown range for livestock grazing is often the determining factor in terms of the sustainability and profitability of this type of farming.

Range values in the plan area are low to moderate for livestock, and generally moderate to very high for wildlife, particularly ungulates. Currently, fifteen tenure holders utilize range within the plan area, ten of which are Guide Outfitters who pasture relatively small numbers of horses used for their guiding operations. To avoid displacing wildlife from critical habitat and foraging areas in the Flathead, livestock use is excluded except for low intensity Guide Outfitter horse use.

Approximately 100 water licenses for irrigation purposes are held in the plan area, which is within the Fernie Water District.

Noxious weeds are present throughout much of the plan area, and can significantly impact range values and wildlife..

Human suppression of naturally occurring fires has contributed to forest ingrowth on range areas and diminished the amount of range available. Range enhancement activities (ie. prescribed burning, thinning) are important to maintaining Crown grazing opportunities and have been ongoing since the 1970's in parts of the SRMMP area.

2.7.1 Agricultural Land Reserve

Agricultural Land Reserve designations within the SRMMP area are concentrated along the Elk River from Elko to Sparwood, and along the Upper Elk and Fording Rivers in the area south of Elkford. In addition, there are two small ALR areas close to the west boundary of the plan, at the confluence of Lodgepole Creek and Wigwam River, and due north from the confluence, on Morrissey Creek.

2.8 Heritage and Culture

2.8.1 First Nations History, Traditional Uses and Treaty Process

The SRMMP area lies within the traditional territory of the Ktunaxa First Nation. The Ktunaxa Nation consists of several communities in southeastern British Columbia, northern Idaho and northwestern Montana. The Ktunaxa traditionally followed "a nomadic seasonal subsistence round determined by the location and timing of abundance of a broad range of animal and plant resources" (W.Choquette, pers. comm). The people travelled extensively throughout the Wigwam, Elk and Flathead valleys (and elsewhere outside the plan area) hunting, trapping, fishing and harvesting vegetation. They also crossed the Continental Divide to hunt bison on the prairies.

There are seven bands in the Ktunaxa traditional territory, five are located in British Columbia and two are in the United States. The Canadian First Nations communities that make up the Ktunaxa-Kinbasket Tribal Council are the Lower Kootenay Band, St. Mary's Band, Shuswap Band, Tobacco Plains and Columbia Lake Band.

The Ktunaxa First Nation are currently at stage 4 of the 6 stage Treaty Negotiation Process. The SRMMP will not limit treaty negotiations or settlements.

2.7.2 Pre-Contact Archaeological & Traditional Use Sites

Numerous First Nations archaeological sites are spread throughout the plan area, and are particularly concentrated in the area between Sparwood and Elkford. Archaeological sites represent only those activities which have left a footprint on the landscape such as campsites or aboriginal mining. Traditional uses such as hunting, berry picking and travel routes may not be evident on the land, however are known through oral history. Traditional use studies of the Ktunaxa territory in the plan area are ongoing.

2.8.3 Post-Contact Archaeological/Heritage Sites

Post-contact archaeological sites are found throughout the plan area in the way of mining, forestry, oil wells and railway sites. Particularly significant or well preserved historic sites include coke ovens, mine structures and townsites near Hosmer, Morrissey, Coal Creek and Corbin, as well as oil well sites in the Flathead.

2.9 Tourism and Recreation

The SRMMP area supports year-round tourism and high quality outdoor recreation opportunities. It is internationally renowned for its rich diversity of natural resources including its spectacular scenery, wilderness settings, rugged mountains, lakes and rivers, abundant fish and wildlife, and an annual average 10 metre snowfall. Outdoor recreation, both motorized and non-motorized occurs in all four seasons and includes snowmobiling, four-wheel drive and all-terrain vehicle use, skiing (alpine and cross-country), nature viewing, hang-gliding, hiking, photography, kayaking, canoeing, rafting, horseback riding, berry-picking, picnicking, camping, caving, swimming, sports fishing and hunting, mountaineering and golf. A variety of cultural-heritage values and sites, a network of interesting communities, and a range of resorts, hotels, motels, camping and park facilities also support tourism and recreation.

Tourism, after mining and the public sector, is the third most important contributor to the Study Area's economic base. According to BC Stats 1996 census information, 15% of the basic employment and 5% of basic income in the area depends on tourism, and indications are that this sector will continue to grow strongly[11] . This view is supported by the historical trend of growth in tourism, the number of tourism-related investments being proposed (including backcountry recreation operations), the proximity of the area to Alberta and the US borders, and the fact that all of the communities in the SRMMP area include tourism as a key economic development priority. The Fernie Alpine Resort is seen as a major driving force to development of the tourism sector in the SRMMP area. Developments outside the SRMMP area like the Kimberley Alpine Resort will have spill-over effects on, and reinforce tourism growth in the Study Area.

Tourism products are described in the KBLUP-IS as "front-country" (products offered in communities and along main travel roads, eg. golf, alpine skiing or accommodation) or "backcountry" (those offered away from communities and travel corridors eg. heli and cat skiing, guide-outfitting). While front-country tourism is primarily located on private land, it is nonetheless highly dependent on the natural resources on surrounding Crown land.

A visitor profile undertaken in 1995-96[12] showed that 85% of visitors to the eastern Rockies were non-residents, and 15% residents of BC. Leisure versus business travel to the area accounted for the majority of visitors, both resident and non-resident.

Public recreation facilities in the SRMMP area include one provincial campsite (Mt. Fernie) with an average of over 12,200 visitors per year between 1998-2000[13]. There are also several significant provincial protected areas adjacent to the SRMMP area: Akamina-Kishinena, Height of the Rockies, Elk Lakes, and Top of the World parks.

Commercial facilities in Fernie, Sparwood and Elkford support recreation and tourism in the SRMMP area. In Fernie, this includes the Fernie Alpine Resort, Island Lake Lodge, over 20 lodges, motels and hotels, 2 hostels, several B&B's, 2 private campground/RV parks and a large variety of retail outlets, food/beverage services, golf courses, museums, galleries and studios. Sparwood has a number of food and accommodation establishments as well as a small ski hill and golf course. In Elkford, there is also a small ski hill, golf club, municipal campground and two motels.

---

[11] Socio-Economic Base Case for the SRMMP, April 2002 (draft)

[12] British Columbia Visitor Study: The East BC Rockies Visitor Report, Tourism BC 1998.

[13] Socio-Economic Base Case for the SRMMP, April 2002 (draft)

There are 10 Guide Outfitters with territories entirely or partly within the SRMMP area and 18 commercial recreation (outdoor adventure) operators[14]. The commercial recreation operators, and to some extent the Guide Outfitters, offer a range of outdoor recreation activities including hiking, horseback riding, wildlife viewing, rafting and fishing. Over the last few years, there has been a significant increase in angling guide licenses issued in the SRMMP area which has raised some concerns about the negative impacts of the growing angling pressure on fish populations as well as the recreation and tourism resource.

3. Project Team and Key Deliverables

3.1 Project Team

The process of developing a management plan for the area will be led by the Ministry of Sustainable Resource Management. A listing of the core project team can be found at :

An interagency liaison group will be established to provide active input to development of the management plan. Participation will be requested from First Nations and various government ministries and agencies.

3.2 Key Deliverables

The Southern Rocky Mountain Management Plan will provide direction for multiple resource use and recreation access while maintaining key wildlife and habitat.

The following deliverables will be produced by 2003:
- public input summary report and Focus Group issues list
- background report
- socio-economic analysis
- draft management plan

---

[14] Socio-Economic Base Case for the SRMMP, April 2002 (draft)

SOUTHERN ROCKY MOUNTAIN MANAGEMENT PLAN

APPENDIX 13.0

OPEN HOUSE & PUBLIC MEETING PUBLIC INPUT SUMMARY REPORT

DECEMBER 6, 2002
FERNIE, BC

TABLE OF CONTENTS

1. INTRODUCTION **3**

2. PUBLIC MEETING AGENDA **4**

3. PUBLIC INPUT **5**

- 2.1 Open House questionnaire results 5
- 2.2 Public Meeting open-floor questions and comments 6

1. INTRODUCTION

The Open House and Public Meeting for the Southern Rocky Mountain Management Plan was held at the Best Western Motel in Fernie, BC on Thursday, December 6, 2001. The Open House ran from 1:00pm – 7:00pm and the Public Meeting from 7:00pm – 9:30pm.

The Open House was intended as a drop-in for the public to view information and maps regarding the Southern Rocky Mountain Management Plan, and speak with government staff. Written feedback was also welcomed (see Section 2.1 for Open House questionnaire results).

There were four staff from the Ministry of Sustainable Resource Management (MSRM) in Cranbrook and six staff from MSRM in Nelson, as well as MLA Bill Bennett, available to meet people, listen to comments and answer questions. The MSRM staff included all members of the Project Team (see Appendix A for members of Project Team).

Approximately 50 people attended the Open House, and approximately 115 people in total participated in the Open House and/or the Public Meeting. (See Appendix E for the list of attendees.)

The following fourteen (14) groups were represented:

- Consultants
- Economic development
- Environmental groups
- First Nations
- Forestry
- Federal Government
- Local Government
- Provincial Government
- Media
- Mining
- Oil and gas
- Out of Province
- Residents/general public
- Tourism/recreation

The Public Meeting consisted of a series of presentations by members of the Project Team, followed by an open-floor question and comment period. The meeting was moderated by Ken Gorsline. Ken and other members of the Project Team fielded questions during the open-floor portion of the meeting.

The Public Meeting agenda is provided below, and a link to the PowerPoint presentation is provided as Appendix D. A summary of the open-floor questions and comments is in section 2.2.

2. PUBLIC MEETING AGENDA

SOUTHERN ROCKY MOUNTAIN MANAGEMENT PLAN

Public Meeting
December 6th, 2001
7:00 to 9:30 PM
Best Western Fernie Mountain Lodge
Fernie, BC

TOPIC	SPEAKER/PRESENTER
Welcome	Ken Gorsline (Chair)
Introduction	Bill Bennett, MLA
Process Explanation	
• Background	Ken Gorsline
• Known Key Values in the Area	Rob Neil, Dave, Grieve, Kevin Weaver, and Tom Volkers
• Planning Process – Public Consultation	Margaret Bakelaar
• Planning Process – Technical Analysis	Tom Volkers
• Planning Process – Deliverables	Tom Volkers
• Planning Process – Implementation	Tom Volkers
• Linkage to other Planning initiatives - Flathead Enhanced LU Process, National Park Proposal, KBLUP	Tom Volkers
• Linkage to Other Planning Initiatives – Recreation Management Strategy	Kevin Weaver
Open-floor questions and comments	Moderated/chaired by Ken Gorsline
Wrap-up	Ken Gorsline

3. PUBLIC INPUT

2.1 Open House questionnaire results

Summary of written comments received at the Open House & Public Meeting concerning the consultation process:

- Give downstream stakeholders an opportunity to comment. These include: Glacier National Park, Flathead Basin Commission, North Fork's Landowner Land Use Advisory Committee and affected residents from Montana.
- Include as many people as possible and listen. Keep it public – keep us informed.
- Our current laws and regulations protect all resource users now.
- KBLUP was an extensive and thorough planning process and addresses those resource values identified in the SRMMP.
- Obtain the best available science on all relevant subjects and put it out for all to see.
- Plan for long-term ecological integrity first – think long-term as in 50 – 100 years, not 5 years.
- Base decisions on scientific fact, not consensus.
- Consult the CORE process and recommendations of the CORE table.
- People need to know about this consultation and ramifications of such an important decision.
- Once a plan is in place and agreed on, it must become law with strong legislation to protect this area and with strong enforcement.
- Be certain to show existing closures in the Elk Valley to motorized recreation (summer) which are clearly designated in hunting regulations.
- Ensure process is directed and controlled by government.

Summary of written comments received at the Open House & Public Meeting concerning the planning process:

- If we want market for our products – tourism and timber – we must put environment and wildlife as the first priority.
- Columbia-Kootenay Fisheries Renewal Partnership (CKFRP) is beginning a Strategic Fisheries Plan for the Elk-Flathead and welcomes the opportunity to develop this plan along with the SRMMP. Cranbrook office: 250 417-3474
- Please ensure all resource users get equal say on their interest.
- Give all involved a voice and a chance.
- Very good to see the SRMMP will take direction from the KBLUP.
- Noxious weeds should be part of the management plan.

- We need to preserve for the future, which means sacrificing our wants and desires now.
- The maintenance of long-term biodiversity is the most important thing. Boundaries touching Alberta, Montana and Invermere Forest District should have associated resource inventories mapped to show what is planned within these jurisdictions.
- Regard for watersheds and environmentally sensitive areas should be a high priority where resource extraction and logging are involved.

2.2 Public Meeting open-floor questions and comments

Summary of input received during Public Meeting concerning the SRMMP area and the planning process:

The point was made several times that the SRMMP area is "incomplete." In other words, the choice to include only portions the Elk and Bull river drainages introduces an artificial boundary. Natural systems are better managed when whole drainages are considered. The recommendation inferred is that expanding the boundary would be of benefit to wildlife connectivity and other values that tend to encompass entire drainages, and to the overall integrity of the plan.

The subject of peer review also came up on more than one occasion. The promise of a science-based plan (which people clearly want) appears to be at odds with the short time frame.

The need for meaningful enforcement mechanisms was another common theme. People don't want to see another plan that doesn't get implemented. Concern was expressed about the availability of funds and resources to carry out enforcement activities. Some believe the plan needs to be written into law in order to be effective.

The issue of balance was raised. Some concerns were expressed over the apparent diminution of wildlife values in moving from a Conservation Area to a Management Plan. It was pointed out by one participant that parts of the SRMMP are in Special Management, mainly for their known wildlife habitat values. On the other hand, some participants were concerned that current or future activities, either recreational or industrial, might be curtailed through the imposition of a Management Plan.

The proposed National Park in the Flathead was mentioned frequently. The proposed park would appear to cause credibility problems for MSRM and the SRMMP process. The fact that a new park would add to the already completed protected area process, and might set a precedent for *ad hoc* park creation, was also raised as a concern.

The implications, and the role, for First Nations were raised, in the context of the need for both provincial and federal levels of government to resolve issues with First Nations.

Some were concerned about the implications for people in northwestern Montana.

Management on private land (which is not part of the SRMMP) was raised as a concern.

There were concerns expressed about various processes, including the establishment of the Conservation Area by the previous government and the rescinding of the Conservation Area Order by the new government, and the new Management Plan process itself. Some were disappointed that the Conservation Area was being rescinded, while others felt it was appropriate given a lack of public consultation. It was not clear to most just what the Management Plan designation implies in terms of levels of protection. Some were unclear as to who will make the final decisions on what goes in the Management Plan.

Finally, the issue of sustainability was raised. With a new ministry having "sustainable management" as its name and fundamental objective, and with a mandate to carry out strategic land-use planning, it will be good to know how the government defines "sustainability". In other words, how many generations does a sustainable plan encompass?

Southern Rocky Mountain Management Plan (SRMMP)
Public Meeting
Thursday, Sept. 19, 2002
Best Western Fernie Mountain Lodge
Fernie, BC
1:00 – 5:00 pm

MEETING NOTES

Introduction:

An open meeting for the Southern Rocky Mountain Management Plan (SRMMP) was held Thursday, September 19th Fernie. Approximately forty individuals attended representing a number of companies and organizations. The following groups were represented:

- Residents/general public
- Forest Industry
- Mining
- Oil and Gas
- Environmental groups
- Agriculture
- Non-commercial Recreation
- Commercial Recreation including Hunting and Fishing
- Rod & Gun Clubs
- Community Land Use
- Federal Government
- Local Government
- Provincial Government
- Out of Province

The purpose of this meeting was to provide an update on the progress of the SRMMP including technical projects, to share the results of the Focus Group sessions held with stakeholders last spring, and to provide an opportunity to view the Recreation Management Strategy (RMS) draft maps.

The meeting consisted of a series of presentations by members of the SRMMP and RMS Project Teams with an open-floor question and answer period following each presentation. The meeting was moderated by Tom Volkers, SRMMP Project Team leader. Members of both Project Teams responded during the question/answer periods.

Ministry of Sustainable Resource Management (MSRM) staff that made presentations and/or attended the meeting were:

- SRMMP Project Team: Tom Volkers, Rob Neil, Dave Grieve, Pam Cowtan, Ken Gorsline Kelly Lode, Kevin Weaver
- RMS Project Team: Kevin Weaver, Steve Flett, Gord McAdams

It should be noted that questions and answers were not recorded verbatim; we endeavoured to capture the intent of the discussion and issues as accurately as possible. A brief description of each agenda item is provided and the PowerPoint presentations from the meeting are posted on the SRMMP website at http://srmwww.gov.bc.ca/kor/srmmp/srmmp.htm.

Summary of Presentations, Questions and Answers

Progress Update

An update of the progress and changes to the SRMMP process was provided by Tom Volkers, SRMMP project team leader. His presentation is posted on the SRMMP website under "Open House Summary Reports".

Question: There are some controversial issues outstanding on the draft access management plans. When are meetings scheduled to address these?
Answer: Meetings have been scheduled and this information will be provided later on today under the Recreation management strategy update.

Question: When were the 13 focus group meetings?
Answer: March, April, May, 2002
Question: Were they part of the RMS *(ie. Recreation Management Strategy)* meetings?
Answer: No.

Question: Will cumulative impacts be considered? You need to add up impacts of, for eg. forestry and mining, not consider separately.
Answer: We would like to, but not sure the degree to which we will be able to do so with our current timelines. An Environmental Assessment will be done. The intent is to look at timber, habitat, and economic effects.

Technical Work Update:

i) Ungulate Winter Range (UWR):

An update of the progress of the UWR technical work being undertaken as part of the SRMMP was provided by Rob Neil, Planning Biologist. His presentation is posted on the SRMMP website under "Open House Summary Reports". Final draft maps will be available at the next public open meeting that will be held Oct. 30, 2002 in Fernie.

Question: Why is the mining industry not represented on the UWR committee when they have such a great impact?
Answer: This question was also asked by the motorized recreation sector at a focus group session. UWR was driven by the Forest Practices Code so the focus was on forestry and the original committee was established 2 years ago, before the SRMMP process began. To date, we have had no direction to expand the committee. However, anyone is welcome to attend a committee meeting.

Question: Your presentation has talked about winter range & habitat, but not population numbers. What numbers are you aiming to maintain?

Answer: The Ministry of Water, Land & Air Protection will manage numbers as part of their mandate. The SRMMP will be trying to address habitat required to sustain population numbers. We will map out the area that could support ungulates & write guidelines to achieve this.

Question: Can you explain BEC sub zones for everyone to understand.
Answer: A description of the process of zoning designation was provided

Question: How does this all tie together with RMS and the rest of the SRMMP?
Answer: Access is very important to UWR and recreation access is addressed in the RMS.

Question: If you identify the sensitive wildlife habitat, how will it be implemented in UWR/SRMMP?
We identify a lot of sensitive areas, but that seems to be as far as it goes.
Answer: That is up to the RMS team to integrate. We haven't been able to work out industrial access. We would like to be able to sit down with industry and discuss the important and sensitive habitat.

Question: Respecting access, we're left with mining legacy – a company punched a road into Middle Pass 40 years ago and never closed it. Now people use it heavily. What can be done to address this problem?
Answer: No road is built today that doesn't have the entire life span considered. Part of permitting process includes reclamation requirements and bonding. Regulations weren't in place 40 years ago, so nothing can be done about that now.

Question: But they might leave road open for 5 years and meanwhile a sensitive area is destroyed.
Answer: UWR mapping is taken into account by Statutory Decision Makers in the permitting process.

Question; UWR work is done on Crown Land. Is any of the information obtained on private land (including mining) impact analysis being used?
Answer: Yes, all information will be utilized regardless of land status and included in the mapping.

ii) Connectivity:

An update of the progress of the Connectivity technical work being undertaken as part of the SRMMP was provided by Rob Neil, Planning Biologist. His presentation is posted on the SRMMP website under "Open House Summary Reports". Final draft maps will be available at the next public open meeting that will be held Oct. 30, 2002 in Fernie.

There were no questions.

iii) OGMA

Tom Volkers described technical work progress on identification of Old Growth Management Areas (OGMAs) for the plan area. The SRMMP team will identify OGMAs to meet old seral targets and depending on the BEC, the age that defines Old Growth varies. Areas are delineated using forest inventory maps and aerial photos and verified through flights conducted by MSRM staff including forest industry representatives. These areas are further refined based on the identified field attributes. The old growth targets will be met in constrained areas first and, where targets can't be met, they will be put in non-constrained areas. OGMAs will be adjusted to the new BEC line work for the Cranbrook Forest District and form part of the Connectivity matrix.

Question: The old planning process and this new process are supposed to be a balanced approach. But all the old growth has been cut in the valleys so now socio economic values have been destroyed. The only old growth that will be left are those that are not accessible. This is unacceptable and unbalanced. What are you going to do to balance the values in this process?
Answer: We can't turn back time. An old growth recruitment strategy is needed to identify the best location and best structural attributes of existing forests that can develop old growth attributes in the shortest possible time. Where there is a shortage of old growth, an old growth recruitment strategy can use the Timber Harvesting Land Base to meet targets. Those areas in the SRMMP that have a shortage of old growth will have recruitment OGMAs identified to meet the old growth targets.

Comment: This answer doesn't answer his question but he'll talk further to Tom Volkers personally.

iv) Mining:

Dave Grieve, Minerals Planner for the SRMMP project team, provided information on the Two-Zone System. His presentation is posted on the SRMMP website under "Open House Summary Reports".

Question: One of the managers in the Elk Valley once said coal potential in the Elk Valley equals approximately 8 billion tons. But to get at this they would have to bulldoze from the Elk Lakes to the US border. You said mining does not affect environmental values. How can you argue that this would not have an affect?
Answer: Your scenario is an exaggeration. There are gaps, and most sites are not appropriate for surface mining. The permitting process would not change ie. a large mine project will always go into an environmental assessment process, with public involvement, and it takes years to establish a mine site. What this 2-Zone system is saying is that mining is an acceptable land use providing it meets environmental standards.

Question: You say present policy hasn't changed. How does mining deal with other tenures?
Answer: For advanced exploration, you, as a guide outfitter, would have say in the approval process.

Question: Guide Outfitting has a proven track record for revenue to the government. The unproven economics seem to have the advantage over proven economics (ie. mining versus guide outfitters).
Answer: Building of new roads is not taken lightly – there are decision criteria which ensure that disturbances are appropriate and managed.

Question: Is there mandatory input into the road building? There should be mutual respect between parties involved.
Answer: It's important that a guide outfitter has a good working relationship with mines office.
MWLAP is in charge of guide outfitters and is supposed to give the names of guide outfitters to mines office during a referral.

Comment: There seems to be a breakdown in communication among mines/MWLAP and tenure holders.
Response: Communication is a fragile art. Dave Grieve is saying that exploration is a staged process, and work is not done on a whim, but if there is a breakdown in communication, there will be problems.
Response from the floor: As an industry person, I always contact other tenure holders directly.

Summary of Focus Group Sessions:

Dave Grieve, SRMMP Project Team, gave a presentation on the results of the Focus Group sessions held with participants last spring. This presentation is posted on the SRMMP website under "Open House Summary Reports".

Question: What studies have been done and are they available to the public?
Answer: The Socio Economic Base Case is done and is posted on the website. The Environmental Risk Assessment will hopefully be available at the next meeting. There are other documents also posted on the website.

Question: Is the Carrying Capacity Study done?
Answer: Yes. The RMS team contracted a Carrying Capacity study last winter for the Elk Valley. The "limits to acceptable change" model was used. This turned out to be a "Cadillac" version that is not affordable to implement. Such studies are being looked at on a provincial basis as to how they can be made affordable. A full study for the whole area is not feasible at this time. The Study has provided good insight and it is available to public by request but not on the website.

Recreation Management Strategy:

Kevin Weaver, Manager of the RMS Project Team, provided some background on the Recreation Management Strategy. The Strategy came about to address issues surrounding referrals on new commercial Crown land tenures. BC Assets and Land's old process for issuing tenures was to refer them for comment to other agencies. Because of increasing concerns about conflicting tenures, the Regional District of East Kootenay decided not to entertain further referrals until a recreation strategy was put in place in Cranbrook and Invermere Forest Districts. In the fall of 2001, a model was developed. Initially the idea was to do a commercial recreation strategy only, but they soon realized the strategy must include public recreation as well. They started with Cranbrook Forest District because it would be needed for the SRMMP.

RMS will be built into the SRMMP and, for those portions outside, they may become a chapter in a separate SRM plan. Kevin Weaver is a member of both the RMS and SRMMP Project Teams to ensure coordination between the two processes. An RMS Stakeholder Meeting is scheduled for Oct 5 to address RA2 road detail and some specific issues.

Steve Flett, Tourism Planner on the RMS project team, gave a presentation on the progress of the RMS. A copy of his presentation is posted on the SRMMP website under "Recreation Management Strategy" and "Open House Summary Reports".

Question: Do you expect any mapping to come out of the RH zones?
Answer: This is a project that needs to be completed. There is some dissatisfaction with the current maps but they reflect what was said at sessions. We're not wrapped up yet – there will be two more stakeholder sessions (Oct 5 and another to deal with helicopter access and any other issues). Access management is important to SRMMP since there are a lot of things affected by it. But we can't deal with industrial access right now and it's recognized that there might be incompatible use. There is a link between industrial and recreational access and a need to take the recreation access plan to industry, but as yet there is no connection.

Question: Respecting helicopter access, according to the RMS what is allowed at Connor Lakes?
Answer: Parks have specific rules on helicopter access and the ability to control this. BC Parks have a no-fly zone of 500 ft and National Parks has a 1000 ft. zone, but special permission can be obtained if necessary.

Question: This meeting was misadvertised and I want it recorded that I am not happy with the time of the meeting. I want to make that message loud and clear. The draft RMS maps say they are "final". I hope these are not the final product.
Answer: The maps say they are "Final Draft".
Question: Will there be more RMS meetings taking place? And when?
Answer: Yes, Oct 5th there will be a stakeholder meeting and an email should go out by Sept 20th to all RMS stakeholders. The RMS work has to be wrapped up in

October so it can be incorporated into the SRMMP before the October Open House, and to meet the deadline for the draft SRMMP to the Deputy Minister by Dec 31. We appreciate your comments that the RMS process was rushed, but on a positive note, we now have more time to deal with final issues.

Question: What is the status of helicopter zoning? There were only supposed to be two landing sites. Are you waffling on RH2 landing sites?
Answer: No

Question: Is the Public Open House the end of October an informational meeting or is it for public input?
Answer: It will be both. Both the RMS and SRMMP project teams will be there and you will have an opportunity to provide comments/input and receive information. This will also be your opportunity to provide comment on the first draft of plan guidelines. The final draft will be done and then sent to the Deputy Minister.

Question: I hope the open house/public meeting doesn't turn into a vote session.
Answer: When a public review process occurs, it is not a voting session – we look at comments, make adjustments, provide socio-economic impacts, and incorporate your response into the plan that goes to Deputy Minister.

Question: Are final draft RMS maps using the new ungulate winter range maps?
Answer: No, if there are any changes to UWR, we will need to overlay this and bring back to stakeholders.
Question: Will these overlays be in the form of transparencies for next meeting Oct. 5th?
Answer: Yes, the UWR final map will be completed Sept 25 and provided to RMS team. It appears though, from looking at the UWR and RMS draft maps, that there are not a lot of discrepancies.

Question: What about summer sensitivities, ie. grizzly bears?
Answer: They are part of connectivity concept and avalanche tracks have been mapped. Some of the same expertise that Rob Neil and the SRMMP team have been drawing upon for wildlife sensitivities, has been at RMS tables. Rob Neil will ensure the RMS team receives a copy of the grizzly mapping.

Question: Does the UWR automatically become RA1 and RH1?
Answer: This depends on the capability of area and there could be motorized corridors through UWR. RMS is going to try to accommodate motorized use in UWR where possible through timing constraints.

Question: Respecting the 500m zone and 2000m zone for helicopters. What's happening there?
Answer: The 2000m clearance rule applies for all new helicopter tenures under the Commercial Wildlife Recreation tenures policy. The 500m rule is for existing tenures. An extensive literature review resulted in the 2000m rule. This policy

only applies to commercially tenured helicopters and it cannot be imposed on untenured charter activities. For untenured activity, Transport Canada has full authority.

Question: Will Rob Neil be at Oct 5th meeting?
Answer: It hasn't been decided who will be there to provide input on wildlife, whether it's Bob Forbes or someone else. Since Bob is the regional wildlife biologist, he is responsible for this.
Comment: It would be better if Bob and Rob could both be there.
Answer: Rob Neil said that he will be there if his participation is wanted and needed.

Question: We've been told that any access management areas currently in place will not be revisited?
Answer: Yes, that's right.

Wrap Up and Next Meeting

Tom Volkers, SRMMP Project Team leader, provided closing remarks. He noted that we have received a lot of information and perspectives from participants. The plan will not be able to address some of the issues brought forward where they are the mandate of other agencies. There has been a great deal of technical work accomplished to date and more still needs to be done. As a project team, we will be doing our best to produce a balanced plan that is both environmentally and economically sound. We recognize that it will not be possible to satisfy everyone completely. He thanked everyone for their time and input.

Upcoming meetings:
Recreation Management Strategy Stakeholders session – Oct 5th in Fernie
Southern Rocky Mountain Management Plan – Oct 30th at the Best Western Lodge in Fernie

SOUTHERN ROCKY MOUNTAIN MANAGEMENT PLAN
OPEN HOUSE
WEDNESDAY, OCT. 30, 2002
BEST WESTERN FERNIE MOUNTAIN LODGE
FERNIE, BC
1:00 – 9:00 PM

SUMMARY OF PUBLIC INPUT

(last updated 02/11/28)

INTRODUCTION

An open house for the Southern Rocky Mountain Management Plan (SRMMP) was held Wednesday, October 30th in Fernie. Ninety-seven individuals attended; the following groups were represented:

- Ktunaxa Kinbasket Treaty Council
- Residents/general public
- Forest industry
- Coal mining
- Mineral exploration
- Oil and gas exploration
- Environmental interest groups
- Non-commercial recreation
- Commercial recreation
- Hunting and fishing
- Guide-outfitting
- Wildlife photographers
- Local government
- Community economic development
- Provincial Government
- Out-of-province
- Media

The purpose of the Open House was to provide an opportunity to view and discuss new technical information, including the Recreation Management Strategy draft maps. Material was presented in the form of posters, draft maps and a continuous slide show. There were no formal presentations, but MSRM staff (including Pam Cowtan, Steve Flett, Dave Grieve, Kelly Lode, Darcy Monchak, Rob Neil, Tom Volkers and Kevin Weaver) were on hand to explain the technical material and answer questions.

Information on display covered the following topics: ungulate winter range, connectivity, old-growth management, Recreation Management Strategy, visual landscape management, and two-zone system for minerals.

Comment forms were provided to attendees, corresponding to the various topics on display. Attendees also had the option of providing written comments through the SRMMP web-site and by mail or email. The cut-off date for receiving written comments by all methods was November 5, 2002. Comments received are summarized by topic area below. Verbal comments in many cases were noted by MSRM staff but have not been compiled.

SUMMARY OF COMMENTS BY TOPIC

Ungulate Winter Range

All feedback that we received concerning ungulate winter range (UWR) identified the importance of UWR, and the need to manage it appropriately. The general indication was that the objective should be to avoid degradation of habitat. A few commentators noted that the new UWR mapping and management objectives appear to be on the right track, but one was sceptical about the need for all areas of moderate to high capability to be managed for UWR alone.

Enforceable access management provisions, specifically restrictions on motorized access, were identified as a key requirement for managing UWR. The need for forest operations to create and maintain the open range and open forest components of UWR was identified. There were calls for no recreational tenures and no construction of new structures in UWR.

Moose winter range was mentioned specifically by two individuals – specifically the need to establish and meet forage objectives and cover requirements. One individual requested access to UWR committee research for use in mine reclamation planning.

Connectivity

The importance of protecting habitat for a full range of species appeared to be shared by all commentators. It was pointed out that connectivity zones must maintain functional wildlife habitat. To this end, the importance of maintaining forest structure, along with having enforceable motorized access controls and a ban on settlement and permanent structures, was consistently pointed out.

In addition to key habitats, the importance of linkages, including low-elevation-to-high-elevation, riparian, expanded low-elevation old-growth, cross-valley and "recovery" corridors, was pointed out. Some felt that the corridors themselves (as opposed to the "matrix" elements) should be the dominant factors. The role of cover was emphasized by some. Some felt that a formal designation, such as a high Biodiversity Emphasis Option or a Wildlife Management Area, was needed on connectivity zones, while, on the other hand, one commentator pointed out the need for these zones to be fluid and adaptable over time. One individual was concerned over whether connectivity management is to be achieved through management of other values or through additional, specific measures.

Old-growth management

Comments concerning old-growth management all emphasized the need to reserve adequate amounts of old forest, and to do so in a way which properly represents the landscape and contributes to biodiversity. Several people felt that the current process does not meet these requirements, because of one or more of the following reasons:

- Percentage targets, based on limited timber impacts, are too low
- Old growth targets are below "natural" old-growth levels
- Proposed old-growth management will not adequately support biodiversity
- Targets only meet minimum requirements, leaving little leeway to adapt and creating difficulties in maintaining old-growth levels
- Many OGMAs are too small, failing to provide interior conditions and contributing to fragmentation/loss of connectivity
- Too much old growth is applied in non-contributing forests

Several people commented on the concept of mature being "turned off" (Higher Level Plan amendment, 2002). The feeling was that this would make OGMAs less effective, and biodiversity more difficult to maintain, over time.

Some commentators offered advice, including:

- Reserve all old growth, unless there is a good reason not to, because the district is in deficit
- Don't designate old growth in parks
- Designate old growth where it is best for biodiversity
- Make sure that OGMAs connect to other key habitat areas and are representative of the entire landscape
- Focus retention of old growth in low and medium-elevation areas
- Use the mature-plus-old targets in the Biodiversity Guidebook
- Mature stands near to old-growth should be reserved for future old growth
- Raise Biodiversity Emphasis Options across the plan area
- Old growth areas should meet the average of the range for high level biodiversity

We received one positive comment on the fact that it appears that OGMAs are not "hard-wired" (i.e. they are somewhat flexible).

Recreation Management Strategy (RMS)

[Note: RMS received more comments than any other subject area, and these comments covered a wide range of views. Many of these comments, however, dealt with site-specific issues. Site-specific commentary has been compiled and is being used by the RMS project team in their decision making. However, only the more general comments are presented here. Some of the comments received under other topics (e.g. ungulate winter range) also address recreation access issues.]

Easing current or proposed access restrictions was a theme for some commentators. One person felt that restricting public access is bad for tourism. Another felt that the proposals appear overly constrictive, which may alienate some (motorized) user groups. We also heard that closure of existing roads will force motorized recreationists into the alpine, thereby creating a new set of problems. One view was that seasonally closed areas should always be open to non-hunters. The possibility of leaving road maintenance up to users was also raised.

On the other hand, many felt that access restrictions are good and should be enhanced. A few recommended that motorized access across the Continental Divide should be limited to Highway 3, and we also heard that heli-access should be disallowed throughout the SRMMP area. The continued closure of all AMAs (access management areas) to motorized traffic was recommended, along with leaving the door open to future closures as needed. Respecting old CAMP (coordinated access management plan) closures was recommended, as well as restricting all motorized access to established roads. We also received the views that there are too many motorized zones on the winter map, and that wildlife should always take precedence over recreation.

The need for legalized designations and meaningful enforcement was expressed by several respondents. Some felt that an industrial access management plan, which addresses the same concerns as the RMS, is also needed. One respondent felt that better definition of seasonal periods is needed; for example, does summer include the hunting season? The same person wanted to see the background information behind the access designations.

With regard to commercial recreation permits, we received the recommendation that there should be a moratorium of new permits until the RMS and SRMMP are in place. Some felt that the provincial wildlife guidelines for development need to be applied to both commercial and non-commercial recreation.

We also received a concern about the disappearance of Forest Recreation Sites. One commentator also noted that Search and Rescue operations will be hampered by motorized-use restrictions, and that there needs to be notification to S&R groups when closures are implemented. One comment related to the need for public education in order to limit the spread of noxious weeds.

Visual Landscapes

Several people commented that visual management is of less importance than biodiversity management. A common concern was that application of visual management is too limited; it was felt that it should be applied to back-country areas as well as front-country areas. Specifically-mentioned areas for visual management included the Flathead valley, lands adjacent to all provincial and federal parks, the upper Elk valley, Todhunter Creek and Highway 43 (upgrade of management priority), and generalizations were made concerning visuals from trails and other recreational features and access.
Forestry methods were mentioned by a couple of commentators, including the need to utilize selective logging and/or cut-block design to limit impacts. One respondent was concerned over which agency takes responsibility for visual objectives, and also pointed out that the maps are outdated.

Two-zone system for minerals

The two-zone system raised a range of responses. Some liked the clarity of the system, and were grateful that mining concerns, as raised during consultation, had been listened to. Several individuals pointed out the importance of ensuring that consideration for the impacts of mining-related activities on other values is maintained. Another view was that the policy gives unwarranted freedom to the mining industry, and that mineral exploration should be restricted or forbidden in sensitive areas. Restrictions on road building in the exploration phase, in certain areas, were also mentioned.

Other issues (including general comments)

A range of other issues was raised, including:

- First Nations consultation and opportunity for participation (considered inadequate)
- National Park proposal (mainly support for)
- Funding to implement the plan (apparent lack of)
- Rate of development in the area (perceived too high)
- Need for balance in land-use direction
- Need to highlight resource development priorities
- Plan complexity (for Open House attendees)
- Plan complexity (for users)
- Need for legal backing to final plan
- Need for sound and thorough socio-economic and environmental analysis (with several specific comments and recommendations)
- Need for peer review by experts
- Need to assess cumulative impacts
- The perception that the consultation approach has not allowed enough opportunity for interest groups to hear each others' concerns
- Perceived need for fundamental concepts like "balance" to be better defined
- Need to incorporate new data as they become available
- Advertising for the Open House (deemed inadequate)
- Need to avoid confusion and clearly define inter-relationships of SRMMP and other plans such as the Higher Level Plan

SOUTHERN ROCKY MOUNTAIN MANAGEMENT PLAN

APPENDIX 14.0

FOCUS GROUP SUMMARIES

Southern Rocky Mountain Management Plan: List of Focus Group and Technical Workshop Sessions and Participants

I. Sessions:

- Public Connectivity Workshop, February 6, 2002 in Cranbrook
- Forestry Sector Focus Group, March 4, 2002 in Cranbrook
- Mining and Petroleum Sector Focus Group, March 6, 2002 in Cranbrook
- Connectivity Technical Workshop, March 12, 2002 in Cranbrook
- Commercial Hunting, Fishing & Trapping Focus Group, March 27, 2002 in Fernie
- Recreational Hunting and Fishing Focus Group, March 27, 2002 in Fernie
- Montana Focus Group, April 8, 2002 in Kalispell, Montana
- East Kootenay Residents Land Use Coalition Focus Group, April 11, 2002 in Fernie
- Environmental Interest Sector Focus Group, April 11, 2002 in Fernie
- Agriculture Sector Focus Group, April 16, 2002 in Jaffray
- Forestry Sector Focus Group 2, April 22, 2002 in Cranbrook
- Mining and Petroleum Sector Focus Group 2, April 23, 2002 in Cranbrook
- Local Government and Economic Development Focus Group, April 25, 2002 in Sparwood
- First Nations Focus Group, April 26, 2002 in Grasmere
- Environmental Interest Sector Focus Group, April 29, 2002 in Cranbrook
- Tourism Sector Focus Group, May 1, 2002 in Fernie

II. Participants:

Public Connectivity Workshop, February 6, 2002 in Cranbrook
Participants:
Ken Streloff, Tembec Industries Inc.
Erica Conrad, EKES
Rodger Berdusco, Fording Coal
Don Jakubec, Tembec Industries Inc.
Dave Ryder, Elkview Coal
Allan Freeze, EKES
Cristal Hart, EKES
David Fantuz, Fernie Rod & Gun Club
Chris Stagg, Tembec Industries Inc.
Kari Stuart-Smith, Tembec Industries Inc.
Lloyd Havens, Tembec Industries Inc.
Peter Davidson, Ministry of Water, Land and Air Protection
David Beranek, Packhorse Creek Outfitters
Ian Adams, Corvus Communications
John Bergenske, EKES
Tom Volkers, Ministry of Sustainable Resource Management
Rob Neil, Ministry of Sustainable Resource Management
Dave Grieve, Ministry of Sustainable Resource Management
Bruce McLellan, Ministry of Forests, Revelstoke

Forestry Sector Focus Group, March 4, 2002 in Cranbrook
Sector Participants:
Bud Nelson, Galloway Lumber Company
Randy Byford, Galloway Lumber Company
Stu Lightburn, Galloway Lumber Company
Mark Nelson, Galloway Lumber Company
Joe Tress, Tembec Industries Inc.
Kari Stuart-Smith, Tembec Industries Inc.
Ken Streloff, Tembec Industries Inc.
Lloyd Havens, Tembec Industries Inc.
Steve Byford, Small Business Forest Enterprise Program

Mining and Petroleum Sector Focus Group, March 6, 2002 in Cranbrook
Sector Participants:
Allan Greeves, Alberta Energy Co.
Rick Walker, East Kootenay Chamber of Mines
Ross Stanfield, Bull River Mineral Corp.
Tim Hewison, Bull River Mineral Corp.
Bob Logan, Line Creek Coal
Roger Berdusco, Fording Coal
Cindy Brunel, Fording Coal
Matt Cole, Fording Coal
Craig Kennedy, East Kootenay Chamber of Mines
Pat Gilmar, Elkview Coal
Mike Bapty, Bapty Research

Connectivity Technical Workshop, March 12, 2002 in Cranbrook
Participants:
Clayton Apps, Aspen Wildlife Research, Calgary
Bill Dolan, Parks Canada, Waterton Lakes National Park
Bob Forbes,Ministry of Land, Water and Air Protection, Cranbrook
Paul Galbraith, Parks Canada, Kootenay National Park
Mike Gall, B.C. Parks, Cranbrook
Dave Gilbride, Parks Canada, Kootenay National.Park
Dave Grieve, Ministry of Sustainable Resource Management, Cranbrook
Bruce McLellan, Ministry of Forests, Columbia Forest District
Rob Neil, Ministry of Sustainable Resource Management, Cranbrook
Michael Procter, University of Calgary, Kaslo
Kari Stuart-Smith, Tembec, Cranbrook
Tom Volkers, Ministry of Sustainable Resource Management, Cranbrook
John Weaver, Wildlife Conservation Society, St. Ignatius, Montana

Commercial Hunting, Fishing and Trapping Focus Group, March 27, 2002 in Fernie
Sector Participants:
Kim Sedrovic, Fernie Wilderness Adventures
Harry Leuenberger, Guide Outfitter
David Beranek, Packhorse Creek Outfitters
Marty Lightburn
Stan Smith, B.C. Trappers Association
Brian Charlton, Bull River Outfitters
Steven Leuenberger, Ram Creek Outfitters
Tim Faiers, Shadow Mountain Outfitters
Wilf Boardman, Guide Outfitter
Anna Fontana, Elk Valley Bighorn Outfitters

Recreational Hunting and Fishing Focus Group, March 27, 2002 in Fernie
Sector Participants:
David Fantuz, Fernie Rod & Gun Club
Mario Rocca, East Kootenay Wildlife Association
Kenton Andreashuk, HCSP-DFO Columbia Kootenay Fisheries Partnership
Kent Petovello, Sparwood Fish and Wildlife Association
Chad Nearing, Sparwood Fish and Wildlife Association
John Poirier, Wapiti River Fly Fishers

Montana Focus Group, April 8, 2002 in Kalispell, Montana
Montana Participants:
Marilyn Wood (Chair), Flathead Basin Commission/The Nature Conservancy
Cathy Barbouletos (Host), Flathead National Forest
Jimmy DeHerrera, Flathead National Forest
Ed Honnig, Kootenai National Forest
Brace Hayden, Glacier National Park
Tara Williams, Glacier National Park
Richard Mennick, Glacier National Park

Steve Gniadek, Glacier National Park
Mary Riddle, Glacier National Park
Forrest Sanderson, Flathead County Planning and Zoning Office
Karen Reeves, North Fork Landowners
Larry Wilson, North Fork Landowners
Whitney Weber, Flathead Natural Heritage/The Nature Conservancy
Rich Moy, Flathead Basin Commission
Dennis ?
Tim Their, Montana Department of Fish, Wildlife and Parks

East Kootenay Residents Land Use Coalition (EKRLUC) Focus Group, April 11, 2002 in Fernie
Sector participants:
Cam Donaldson, EKRLUC
Larry Henriet, EKRLUC
Mario Rocca, EKRLUC
Ted Renner, EKRLUC
Dean White, EKRLUC
Tracy James, EKRLUC
Guy Travis, EKRLUC
Faye Street, EKRLUC
Mike Sosnowski, EKRLUC
Gaetan Dube, EKRLUC

Environmental Interest Sector Focus Group, April 11, 2002 in Fernie
Sector Participants:
Allan Freeze, EKES
Bob Peart, CPAWS-B.C.
Gil Arnold, CPAWS
Steph Hodges, EKES
Bill Hanlon, Hornaday Wilderness Society
Dave Hillary, Nature Conservancy of Canada
John Bergenske, EKES
Wendy Francis, CPAWS-B.C.
Nici Blackwell, EKES
Wendy Nielsen, EKES
Grace? Sonntag, EKES
Brian Brownie, EKES
Rose Watson, EKES
Mary Menduk, EKES
Anne Louise Joyal, Citizen of Fernie
Ted Ralfe, EKES
Millie Barnett, EKES
Don Barnett, EKES
Erica Conrad, EKES

Agriculture Sector Focus Group, April 16, 2002 in Jaffray
Sector participants:
Bob Marcer, Kootenay Livestock Association

Andy McDonald, Kootenay Livestock Association
Brader Charlesworth, Waldo Stockbreeders Association
Faye Street, MM Ranch and Kootenay Livestock Association
Charlie Willis, Kootenay Christmas Tree Association
Dorothy Dunlan, Waldo Stockbreeders Association
Pete Bryant, Waldo Stockbreeders Association
Karen Barton, Grasmere
Joy McIntyre, Grasmere
Mike Malmberg, Ministry of Agriculture
Rick Lightburn, Jaffray
Dewey Reay, Jaffray
Jim Duke, Jaffray
Patricia Logan, Bull River / Silvertip Ranch
Greg Allen, Bull River / Silvertip Ranch
Elliot Pighin, Fort Steele
Lee Holm, Kootenay Livestock Association
Randy Reay, Jaffray

Forestry Sector Focus Group 2, April 22, 2002 in Cranbrook
Sector Participants:
Bud Nelson, Galloway Lumber Company
Randy Byford, Galloway Lumber Company
Geoff Byford, Galloway Lumber Company
Mark Nelson, Galloway Lumber Company
Oliver Thomae, Consultant on behalf of Galloway Lumber Co.
Joe Tress, Tembec Industries Inc.
Kari Stuart-Smith, Tembec Industries Inc.
Ken Streloff, Tembec Industries Inc.
Lloyd Havens, Tembec Industries Inc.
Steve Byford, Small Business Forest Enterprise Program

Mining and Petroleum Sector Focus Group 2, April 23, 2002 in Cranbrook
Sector Participants:
Allan Greeves, EnCana Oil & Gas
Ross Stanfield, Bull River Mineral Corp.
Tim Hewison, Bull River Mineral Corp.
Bob Logan, Line Creek Coal
Roger Creasey, Shell Canada
Roger Berdusco, Fording Coal
Matt Cole, Fording Coal
Craig Kennedy, East Kootenay Chamber of Mines

Local Government and Economic Development, April 25, 2002 in Sparwood
Sector Participants
Cal McDougall, Mayor, District of Sparwood
Ramona Turcott, Counsellor, District of Elkford
Jim Thorner, Fernie Chamber of Commerce
Bob Whetham, RDEK

Geri Rothel, Area A RDEK
Evelyn Cutts, Mayor, City of Fernie
Paul Wortley, Sparwood Chamber of Commerce
Beth Demahower, Fernie Chamber of Commerce

First Nations Focus Group, April 26, 2002 in Grasmere
Ktunaxa Kinbasket Treaty Council and Members

Environmental Interest Sector Focus Group 2, April 29, 2002 in Cranbrook
John Bergenske, East Kootenay Environmental Society
Allan Freeze, Southern Rockies Cross Country Ski Club
Crystal Hart, East Kootenay Environmental Society
Gil Arnold, Canadian Parks and Wilderness Society

Tourism Sector Focus Group, May 1, 2002 in Fernie
Barry Rogers, Kootenay Angling Guides Association, Wild Rose Ranch
John Birrell, Sno Much Fun, Island Lake Lodge
Kim Sedrovic, Fernie Wilderness Adventures
Roy Linklater, EK Snowmobile Tours
Gordon Burns, Tourism Action Society of the Kootenays (TASK), Mountain Magic Ventures

Southern Rocky Mountain Management Plan
Focus Group Summary

Forestry Sector Focus Group Sessions I & II: Summary of Issues
March 4 & April 22 in Cranbrook

1. Timeline
Time frame is too short to address all KBLUP issues.

2. Boundary expansion
Boundary expansion is supported in the case that the plan reduces or maintains existing timber access constraints and costs. Boundary expansion is not supported in the case that the plan increases timber access constraints and/or costs.

3. Draft socio-economic analysis and plan review
Industry should have the opportunity to review the draft socio-economic analysis and plan with adequate time to comment.

4. Forest management objectives
Licensees require:

- defined access to timber over a 20 year time frame. Require an economic spatial exercise to demonstrate harvesting feasibility.
- scientifically based constraints.
- maximized access to timber without compromising environmental values.
- provisions for variance of guidelines where justified to allow for good forest management.
- certainty of land use.

5. Recreation access management
- Legislated and signed closures, and enforcement is required. It is not an industry responsibility to enforce non-motorized use.
- The Recreation Management Strategy is not intended to impact industry however industry predicts that costs of forest management in RA2 zones will increase, and in the case that road deactivation is conducted, industrial access may be impacted.
- Industry will not be deactivating roads for recreation access management purposes.

6. Wildlife habitat
- Access management and wildlife regulations should reflect management objectives.
- Wildlife inventory should be conducted to establish the base case, and management objectives and guidelines should be updated accordingly.
- Funding should be identified for ongoing wildlife monitoring.
- Rare and endangered species mapping needs to be reviewed to confirm that species do occur in the landscape units where they are named.
- Identified Wildlife Guidelines require review and refinement.
- Plan must have the flexibility to incorporate new research and update management accordingly.

7. Settlement and communities
- Flathead international border crossing should remain closed.

8. Noxious weeds

- Noxious weeds should be addressed.

9. Old Growth Management Areas

- Forest industry should have input into the development of OGMA management objectives.
- OGMA's may need adjustment over time, so flexibility should be built into the Landscape Unit objectives.
- Industry wants to review the Biodiversity Algorithm methodology.

10. Legislation

- If there is a separate sustainability act, the plan should be included under that act.

11. Implementation and Monitoring Committee

- Require mechanism(s) for incorporating new information over time, and to provide the flexibility needed for adaptive management.

12. Riparian management and Backcountry River Corridor designation

- Riparian areas and Backcountry River Corridors should be defined on an ecological basis, as opposed to using a straight line corridor of fixed width.
- The Bull, Elk, Flathead and Wigwam River Corridors are roaded and developed.
- The Bull River Corridor width of 500m extends to the operability line and is more extensively developed than the other river Corridors. Suggest removing the designation from the Bull River, and continue the status quo use of Forest Practices Code Riparian Management Guidelines. These effectively provide for management of the river corridor with the exception of Visual Quality Objectives. Since Visual Quality Objectives have already been modified on the Bull River they should be removed.
- In the case that the Backcountry River Corridor designation is to be kept, it is critical to retain flexibility in terms of harvesting and management activities in Corridor.

13. Visual Quality Objectives

- KBLUP-Implementation Strategy Scenic Areas Map requires modification to include areas which are visible from the highway and/or communities, but greater than 12 km distance.
- The Scenic Areas Map needs to be reviewed and commented on by industry.
- Contingency Visual Quality Objective wording could be taken from the Moyie LRUP.

14. Water Quality

- Operational Local Area Agreements are a useful tool for stream management.

Mining and Petroleum Focus Group Sessions I & II: Summary of Issues

March 6 & 23, 2002 in Cranbrook

1. **Timeline**: time frame is too short to address all KBLUP issues.
2. **Transparency of process:** is required.
3. **Plan must be implemented and enforced.**
4. **Best available science** must be used for developing guidelines.
5. **Plan review**
   Sector should have the opportunity to review sections of the plan that concern subsurface resources before the draft is posted on the web.

6. **National park proposal**

- Industry asks that the Province provide an official position in terms of the Park decision as soon as possible.
- The park proposal is a serious concern to industry as it ties into the Yellowstone to Yukon connectivity concept.
- Park recommendations should be vetted through this process. If a park is established outside this process, government will undermine the SRMMP and industry/government working relationships.
- Concerned that in the effort to address park's conservation interests, the SRMMP guidelines could be made so onerous that the area becomes economically inoperable. SRMMP guidelines must be flexible enough to allow the mining industry to flourish.

7. **Boundary expansion**

- Potential negative impacts from inclusion in the plan area are:
  1) Clarifying KBLUP objectives may reduce site specific flexibility.
  2) Industry is faced with uncertainty in regard to the outcome of a new planning process which is unpalatable since industry is lacking trust in government land use planning processes due to experience with the CORE process.
- Potential benefits of inclusion in the plan area are certainty of land use; and consolidation and simplification of operating rules.

8. **Socio-economic analysis**

- Assumptions from CORE regarding job losses must be revisited and reconciled to build trust with industry. Results should be applied to this plan to determine effectiveness of the planning model.

9. **Subsurface resources sector objectives for the plan include:**

- Simplification and clarification of regulation. The status quo is not working due to overlapping constraints. Require clear definition of: the interest being managed for; the guideline itself; and the area to which guidelines apply.
- Certainty of land use, based on Liberal government perspective.
- Stream-lined regulation.
- Access to the resource. The value of mineral deposits should be recognized; and the commitment of the Liberal government to maintaining non-park areas as "open for business" should be re-enforced.
- Flexibility in management guidelines to address specific conditions.

10. **Prescriptive versus results-based approach**

- Use a results-based approach because a prescriptive approach relies on absolute knowledge of each unit, which we don't have. The lack of information lends itself to conservatism on the part of regulators.
- Rules however do provide certainty for operators.

11. Enhanced Resource Development Zones (ERDZ's) for coal

- Coal ERDZs are incomplete and in some areas, incorrect. They only represent about 40% of the known resource. Instead of using existing ERDZ's, define management units based on the known coal resource and ranking (Bob Morris' report), and then consider ERDZ in this context.
- Best economic use determination should be addressed.
- Recognize that zone designations have an economic impact, as they can act as a deterrent to mineral development investment.

12. Old Growth Management Areas

- Industry needs to be informed of the location of existing Old Growth Management Areas.
- Management guidelines should provide flexibility to accommodate subsurface exploration and development.
- Old Growth Management Areas may become more of an issue for mining in the future i.e. high elevation inoperable areas are favored for establishing Old Growth Management Areas, and for mineral exploration.

13. Recreation access management

- Concerned that industry will be indirectly affected by recreational access zoning.
- Zoning creates conflict because recreational motorized access is not permitted and industrial motorized is. Public perception that restricted areas are off-limits for everybody which makes it uncomfortable for industry users and could create artificial barriers to exploration.
- Opposed to any further designation limiting motorized access.
- Reclamation should not be required or carried out. Roads should be treated as assets not liabilities.
- Roads should never be exclusive-use for commercial recreation.
- For existing zoning (Recreation Management Strategy), legislated and signed closures, and enforcement is required, since it is not industry's responsibility to enforce non-motorized use.
- For oil and gas, new roads have to be managed. Gates have the benefit of protecting equipment, but in case of recreational road closure, it should not be industry's responsibility to enforce.
- In the case that oil and gas exploration is successful, road access becomes basically permanent.
- Recreational activity tends to be problematic for industry. Users object to exploration activities. Consider potential impacts of Trans Canada Trail proposal.
- Must use clear language in brochures publicizing Recreation Management Strategy stating that this area is part of the available land base for industrial mining and forestry activity.
- Trans Canada Trail. Plan must be comprehensive and provide certainty in terms of land use, with effective public relations so that the Trail and other recreational use can be established in a positive multiple-use context.

14. Industrial access management

- Alberta Energy Co. would like some direction in the plan.
- Industry already assesses their road impacts and only construct roads where there is an economic benefit i.e. cheaper than helicopter.
- Industrial access must consider seasonal constraints.
- Mining industry requires "protection" for roads. Conflicting messages from Bennett and Tembec on the future of road deactivation. Many other related issues since MOF will be divesting itself of roads.

15. Two Zone System

- Industry may be ensured access, however if terms of access are too onerous, area will be operationally inaccessible.

- Require an appeal process in mine permitting process

16. Connectivity Workshop

- Scientists familiar with mining and energy interests should be represented at these kinds of workshops.
- Connectivity workshop minutes use loaded terms e.g. extinction in reference to wolf population. Term has a high probability of being misinterpreted in review by the public.

17. Mineral potential mapping

- Mineral potential map is flawed and should be rectified for use in the plan. Project Team recommends that industry submit concerns around mineral potential mapping to the Geological Survey. SRMMP will provide for access to the resource without improved mapping and is aware of reservations in regard to mapping. And in the case that the Geological Survey decides to re-do mineral potential mapping, the plan will use it.

18. Backcountry River Corridor

- Industrial activity will continue within the corridor however visuals from the river viewpoint and permanent access are the key concerns.
- Bull River Corridor is already roaded and developed.
- Develop management guidelines that allow industrial activity and flexibility. Will placer mining be permitted?
- Prefer to use status quo i.e. Forest Practices Code Riparian Management Guidelines.

19. Implementation and Monitoring Committee

- Require opportunity to re-visit issues and update plan. Recommend a standing committee to review plan on a periodic basis.

Commercial Hunting, Fishing and Trapping Focus Group Session: Summary of Issues

March 27, 2002 in Fernie

1. **Plan must be legislated and enforced**

2. **Boundary**
Plan boundary should be expanded to a watershed basis.

3. **Timeframe**
Timeframe is too short for considering of the range of issues.

4. **National park proposal**
CPAWS national park proposal is opposed, however Parks Canada involvement in the area is beneficial in terms of gaining non-motorized use designations for LU 18.

5. **Land use certainty and security**
B.C. guide outfitting is an established, world-renowned business with large investment in territory and facilities. Land use certainty and security are needed to protect and encourage investment.

6. **Trapping industry**
Trapping industry should be recognized in this plan.

7. **Uniqueness of this area**
This area's uniqueness is characterized by its outstanding wilderness and wildlife values, which exist in close proximity to the population base. The plan should recognize uniqueness and regulate use to protect it.

8. **Recreation access management**

- Recreation access management is critically important for protecting wilderness and wildlife values. Generally the less access, the better, especially off the main trunk roads. "Wilderness roads", i.e. abandoned roads, do not provide for wilderness values: old roads must be either closed or reclaimed.
- ATV use of reclaimed roads needs to be addressed.
- Access Management Areas (AMA's) should be implemented.
- Recreation Management Strategy should be legislated and enforced.
- Commercial motorized tours and public motorized use are negatively impacting wildlife populations within critical habitat areas, which needs to be addressed on a site specific basis

9. **Crown Land Tenures**

- Environmental base-case document should establish existing wildlife inventory prior to the allocation of any further increase in commercial recreation use.

- Carrying capacity studies for purpose of providing tenure application evaluation criteria must be conducted prior to issuing additional tenure. Environmental and recreational (physical and social) carrying capacity must be addressed.

- Method for allocating tenures should be consistent between backcountry resource sectors, i.e. guide outfitters and commercial recreation applicants. Suggestions for consistent methods include
  (1.) allocating commercial recreation "territories" using an open bidding system based on the guide outfitting model.
  (2.) requiring that applicants conduct socioeconomic and environmental analyses of their proposed uses

for evaluation by the tenure administration agency.
(3.) agency development and use of application evaluation criteria based on comprehensive carrying capacity information.

- Incompatible activities should not overlap. Examples of incompatible uses include:
  (1) backcountry llama trekking, which threatens native wildlife populations with potential for disease transfer.
  (2) commercial motorized tours and public motorized use, which are negatively impacting wildlife populations within critical habitat.

- Protect "quality of experience" by assessing carrying capacity and effectively regulating use. More exclusivity enhances benefits and conserves values. Economic benefits and environmental risks associated with the range of local activities must be identified, and tenure applications evaluated accordingly.

- Note that the illegal cabin at Tunnel Creek is being used commercially.

10. Wildlife Habitat

- Huckleberry patches at Sand, McDermid and Iron Creeks should not be permitted to be commercialized due to resulting wildlife-human use conflict.

- Fire maintained ecosystem management is needed on Wigwam Flats, Sheep Mountain, and the Galton north-south sheep corridors.

- As related to harvesting impacts, forest companies should consult with relevant guide outfitters for site specific wildlife information, and address connectivity; roadway visual buffers, and road deactivation in planning cut block layout.

- Domestic sheep and llama trekking threaten native wildlife populations with potential for disease transfer.

- Rare and endangered Tailed frog habitat needs to be addressed at Couldrey Creek.

11. Fisheries resource

- Angling guide use is depleting the Elk River Cutthroat trout due to ineffective fishery regulation. Imperative that situation be addressed as soon as possible.

12. MOF Recreation Sites

- Sale of sites is likely to negatively impact guide outfitting.

13. Range use permits.

- Livestock should be removed from certain areas because of: conflict between livestock, bears and wolves; existing environmental damage from livestock over-use (e.g. Bull River-McDermid Creek and Goat Haven high elevation sites); and the spread of noxious weeds by livestock.
- Remove livestock from an area in the Galton Range.
- Any expansion of range permits outside of currently permitted areas would be a concern.

14. Private Land

- Dominion Government Coal Block should be included in plan because of access issues.

- Lower Flathead International border crossing should not be re-opened.

Recreational Hunting and Fishing Focus Group Session: Summary of Issues

March 27, 2002 in Fernie

1. **Plan must be legislated and enforced.**

2. **Land use certainty**
   Plan should provide land use certainty in terms of rights to hunt, fish and trap.

3. **National park proposal**
   Proposed park is strongly opposed.

4. **Recreation access management:**
   RMS should be implemented and enforced.

5. **Wildlife habitat**
   Wildlife habitat must be protected in the plan. Critical habitat in Brule and Boivin Creeks needs to be addressed.

6. **Fisheries resource**

- Angling guide over use on the Elk and Wigwam must be addressed. Wild cutthroat trout population is in decline.
- Fishing and guiding license revenue should be used to fund fisheries resource inventory.
- Seeking opportunity to fish for bull trout.

7. **Unguided recreation (public tourist and local resident)**

- Gravelled trails and signed trails attract too many users and result in impacts to environment and wildlife. Socher's trail should not be allowed. Confine unguided tourist activities to specific front country areas.

8. **Commercial recreation**

- Do not encourage increased commercial recreation in Landscape Unit 18.
- Address carrying capacity and allocation of public and commercial recreation. Restrictions excluding the public from certain areas would be unacceptable.

9. **Water quality and riparian areas**

- Heavy guiding angling use is impacting riparian areas: washroom facilities are needed along the Lower Elk River.

10. **Fire maintained ecosystem restoration**

- Restoration should be continued on Wigwam Flats and Sheep Mountain.

11. **Wildlife trees**

- More wildlife trees are needed.

12. **Settlement and communities**

- In the Flathead Valley, settlement should not be allowed.
- Permanent backcountry facilities for commercial recreation must be minimized.
- Elk Valley private land development is impacting grizzly bear and elk north-south migration, and needs to be addressed.

Montana Focus Group Session: Summary of Issues

April 8, 2002 in Kalispell, Montana

Purpose of meeting with Montana resource interests is to identify cross border resource management interests, information and concerns.

1. Kootenai National Forest

- Kootenai National Forest covers the Montana portion of the Wigwam River drainage.
- The Ten Lakes area is a designated Scenic Area and the surrounding forest has wilderness designations. The international border is accessible from the U.S. by roads that come into close proximity of the border at several sites, including Frozen Lake. Frozen Lake is also road accessible from B.C..
- Kootenay Forest secondary roads are zoned for motorized or non-motorized use. The road to the Scenic Area is non-motorized in summer, but winter motorized use is allowed.
- There is no commodity activity currently in the area.
- Major residential and industrial development is proposed for Eureka and is presently on hold. Future pressures as the result of development in the Wigwam drainage are expected.
- Bighorn sheep: One of only two native bighorn sheep herds in this part of Montana frequents Woods Ranch 1500-acre Wildlife Management Area, and is potentially threatened by a herd of domestic sheep close the border in British Columbia.
- Bull trout fishery: The Wigwam River and Grave Creek are premiere bull trout habitat. Concerns exist regarding B.C. fisheries activity.
- Wide ranging carvnivores: The grizzly bear is protected in Montana due to concern over the population's health, and the Wigwam drainage provides prime habitat. Other species of concern in this area include lynx, wolf and fisher.

2. Glacier National Park

- Glacier National Park is located on the east side of the Flathead River in Montana. The area around the northern Montana Flathead River is referred to as the North Fork (of the Flathead River).
- The area of the park that borders B.C. is designated wilderness; all species in the North Fork use the transboundary habitat.
- Flathead River water quality and bull trout habitat must be protected.
- Potential B.C. mining impacts on critical B.C. Flathead wildlife habitat.
- Activities in close proximity to the border such as timber harvesting, road access and fire suppression are of concern.
- Definition of forest health from an ecosystem-based perspective may differ from the commercial forestry perspective.
- Conservation issues are most prevalent in terms of the shared boundary. Historically, Glacier park staff have emphasized management designations on the U.S. side of the border, such as the Flathead Wild and Scenic River designation, and the National Park and the National Forest Plans.
- Glacier park supported the establishment of the Southern Rocky Mountain Conservation Area.

3. Flathead National Forest

- Flathead National Forest is located on the west side of the Flathead River in Montana. The area around the north Montana Flathead River is referred to as the North Fork.
- There is a grizzly bear management focus in Management Area 11: the lands are multiple-use, but all decisions where there are concerns or conflicts favor the bears.
- Recreation is generally dispersed, and toward the primitive end of the Recreation Opportunities Spectrum.

- Recreation access maps are provided at the National Forest front desk. Off-road motorized use is not allowed in National Forests.
- Tenures: guide-outfitter activity is very minimal; commercial recreation is limited to one exclusive use tenure for commercial snowmobiling; and there are two commercial rafting permits in the North Fork. Commercial rafting use is capped at historic levels plus a small envelope for growth.
- Commercial angling guide activity is limited partly by the relatively poor fishing experience in the North Fork.
- No oil and gas leases, or mining-related activities are currently ongoing in the area.
- Access management parameters to address Grizzly bear habitat management include open road densities, total road densities, and security corridors; and were based on the South Fork bear study recommendation for seasonal closures.
- Fire suppression. Fuel buildup in this area tends to be high, so fires are hard to extinguish. And because of private land proximity, fires are extinguished. There is concern over fires starting in B.C
- Bull trout and water quality issues. In Montana, the Flathead Wild and Scenic River designation stipulates that no activities can be approved unless they protect or enhance the river.
- Westslope cutthroat trout. A pure-strain westslope cutthroat trout population spawns in an unknown tributary in B.C., which should be addressed.
- Motorized access. Concerned about snowmobile encroachment at Frozen Lake from B.C..

4. Flathead International Border Crossing

Official position will be clarified, however local Customs opinion is that since 9/11 it would be too expensive to open the border.

East Kootenay Residents Land Use Coalition Focus Group Session: Summary of Issues
April 11, 2002 in Fernie

1. Plan must be legislated and enforced.
2. National park proposal is strongly opposed.
3. Ongoing processes should not impact the Recreation Management Strategy.
4. Transparency of process is needed. More effective information sharing is critical to the integrity of the process.
5. Lack of trust in the Project Team.
6. Input to the process must be from broad sector representation. Keep nested processes either strictly technical or open them up to all interest groups.
7. Existing recreational opportunity should be maintained.
8. Existing ungulate winter range guidelines require improvement.

Environmental Interests Sector Focus Group I: Summary of Issues
April 11, 2002 in Fernie

1. **Plan must legislated and enforced**
2. **Timeframe**
   Timelines are too short to address site specific issues.

3. **Boundary**
   Boundary should be expanded to a watershed basis.

4. **Flexibility**
   Flexibility must be built into the SRMMP to accommodate future change.

5. **Commercial recreation**
   Backcountry recreation planning is a high priority.

6. **Transparency of process**
   Issues expressed in Focus Group sessions should be made publicly available.

7. **Protection of public interest**
   An independent, secure, professional civil service is needed to protect public interests.

8. **Regional biodiversity and wildlife habitat**

- A single vision for conservation is needed for the area between Banff/Jasper National Parks and the International Peace Park (Glacier National Park and Waterton Lakes National Park).
- Environmental Risk Assessment needs to be completed and made publicly available. Environmental benchmarks must be established at the landscape level to measure effectiveness of the plan
- Cumulative impacts of motorized use on wildlife must be addressed.
- Wildlife inventory and target population numbers are needed.
- Aquatic environment is missing from the discussion.

9. **National park proposal**

- Survey method used to measure Elk Valley support for a national park was ineffective because residents were hindered in their ability to express support.
- The proposed national park would provide economic benefits locally.

- The socio-economic analysis component of SRMMP must consider CPAWS proposal to provide Tembec with $23-25 million for upgrades to their mill.
- CPAWS national park proposal is fully supported by this group. Final SRMMP document must state that the park option was not an option, as this is a built-in bias in the process.
- Protected areas: disagree with lack of landscape representation and cap on protected areas.

Environmental Interest Sector Focus Group II: Summary of Issues
April 30, 2002 in Cranbrook

1. **Wildlife habitat**

- New mapping and research are being addressed for ungulates and carnivores in phase 1: plan should address requirements for other species in phase 2.
- Funding for long term wildlife research should be identified in this plan.
- Management objectives should be based on the best available science.

2. **Recreation access management**

- Recreation Management Strategy must be legislated and enforced with significant penalties.
- Overland motorized use should not be permitted in the entire RMS area, except for snowmobiles under conditions of sufficient snow cover.
- Detailed delineation for RA2 winter and summer, needs to be resolved.
- Access Management Areas and Coordinated Access Management Plans should be implemented.
- Areas of intensive non-motorized recreation use should be identified on winter mapping.
- Commercial recreation wildlife guidelines should apply to both commercial and public use.
- Critical wildlife ranges and denning sites should be mapped.
- Wildlife staff should be authorized to implement closures and restrictions based on new scientific information.
- For helicopter access, landing sites, flight paths and frequency should be defined and future use should not expand beyond these limits.

3. **Backcountry River Corridor**

- designation on the Upper Elk, Flathead, Wigwam and Bull Rivers should be implemented.

4. **Old Growth Management Areas:**

- should be deployed to support biodiversity objectives, and should not be placed in the non-contributing land base unless there is benefit to connectivity values.
- should be established by expert opinion based on most recent information, rather than through the use of algorithms.

Agriculture Focus Group: Summary of Issues

April 16, 2002 in Jaffray

1. **Plan must legislated and enforced**

2. **National park proposal**
   National park proposal is strongly opposed.

3. **Existing livestock grazing**
   Plan should identify and accommodate existing grazing.

4. **Grazing opportunity**
   Access to Crown grazing over time has been eroded by regulation to the point that ranching is losing sustainability and profitability. The following factors are reducing grazing opportunity and need to be addressed in the plan:
   - Livestock exclusion from grazing units in the Wigwam, Flathead and lower Elk drainages.
   - Grass seeding cutblocks is no longer being done.
   - Ingrowth. Suggestions for addressing in-growth are:
     (1) allowing a longer window prior to establishing free growing to provide greater interim grazing opportunity;
     (2) increasing post and rail allotment from ingrown stands;
     (3) encouraging christmas tree management to provide harvesting opportunity for christmas trees while increasing forage;
     (4) burning older, severely suppressed stands.

5. **Recreation access management**

- ATV's and snowmobiles need to be restricted to roads only. Overland (trail) use is not acceptable.
- Motorized recreation is not compatible with Crown grazing and ranching.

6. **Commercial recreation**

- Commercial recreation planning; carrying capacity and compatibility of uses need to be addressed. E.g. Overlapping Crown grazing, guide outfitting and an ATV commercial recreation tenure is not working in Bull River. ATV use is not compatible with grazing and guide outfitting.
- Bull River Guest Lodge is attracting European tourists to range areas. This is raising concerns regarding potential introduction of foot-and-mouth disease.

7. **Noxious weeds**

- Weed management needs to be based on managing access and managing disturbed sites (i.e. grass seeding).

8. **Predator control**

- Bull River livestock grazing patterns and calf survival are currently impacted by predators. This needs to be addressed.

9. **Agricultural Land Reserve**
   Plan should identify ALR lands and accommodate potential future agricultural use of these lands.

8. **Riparian Areas**
   Important for livestock and can be managed to protect riparian habitats. Evidence of livestock does not equate to damage to the ecosystem.

9. **Christmas tree industry**
   The Christmas tree industry is in decline in the East Kootenay's because of regulations limiting harvest. Industry is seeking access to harvest trees in areas of ingrowth; and areas planned for burning, slashing and spacing.

Local Government Focus Group: Summary of Issues

April 25, 2002 in Sparwood

1. Plan must be legislated and enforced.

2. National Park Proposal

- Local residents do not support National Park establishment in the Flathead Valley, as they wish to retain flexibility and control over the area locally.

3. Recreation access management

- RMS must be implemented and enforced.
- Overland motorized use should not be permitted throughout the RMS area.
- Costs and benefits of activities should be evaluated, and benefits must outweigh costs before accommodation is made for the activity. One example is ATV use, which potentially could be accommodated through the designation of a specific area.
- More detailed planning is needed to resolve motorized and non-motorized use conflicts in the Wilson Creek area (a.k.a. Cummings Creek).
- Land use certainty and effective regulation should be provided to enable communities to use the backcountry for economic development, while at the same time practicing sound environmental stewardship.
- For future commercial recreation development to expand to it's potential, appropriate zoning needs to be provided. RMS lacked adequate commercial representation and may be biased toward public recreation.

4. Wildlife Habitat

- Conservation of wildlife values must be addressed.
- Wildlife resource information should be made available for reference for local planning processes.

5. Fisheries

- Angling guide over-use on the Elk and Wigwam Rivers is causing the decline of the fishery. Guiding licenses need to be limited and more judiciously allocated; guide outfitter tenure allocation and regulation should be used as a model.

6. Carrying Capacity

- Conduct carrying capacity studies to address natural systems and social experience. Top priorities for carrying capacity studies are 1. community watersheds; and 2. domestic watersheds.

7. Backcountry River Corridor

- Designation should be implemented on the Elk, Wigwam, Bull and Flathead Rivers to ensure no motorized use.

8. Old Growth

- Plan should acknowledge the importance of the Cedar Valley/Island Lake privately owned old growth. This old growth is highly valued by Elk Valley residents and the possibility for a potential Crown-private land swap should be considered for this parcel. A mechanism is needed for long term protection of old growth on private land.

9. Commercial Recreation

- Criteria for evaluating commercial recreation applications are needed and should be developed based on Provincial Stewardship Principles.

- Social and environmental carrying capacities must be determined, and the supply of backcountry ecotourism limited accordingly, to protect the product and the underlying resource.
- Official Community Plans should be brought into the application review process.
- Commercial recreation tenures have a connotation of exclusivity. Existing local operators currently recognize public access rights, however future non-local applicants may not. Non-exclusive rights must be emphasized, and then adhered to by the tenure holder.

10. Settlement and communities

- Private land is limiting access to the backcountry for commercial recreation.
- Settlement planning needs to be collaboratively addressed by local and provincial governments.

11. Plan implementation and monitoring team

- Plan must be implemented, and provide mechanisms for incorporating change and flexibility.
- Method for linking LWBC commercial recreation tenure administration to strategic direction provided in SRMMP needs to be addressed.
- Locally elected government input to provincial planning processes represents broad public interests, as opposed to special interests.
- Dialogue between broad sector interests and local and provincial government through the Recreation Management Strategy has been effective for addressing issues. Ongoing communication is needed.

First Nations Focus Group: Summary of Issues

April 26, 2002 in Grasmere

1. **Protocol**

   Recognition of government to government relationship with First Nations needs to be clearly established. Appropriate protocol for communications should be developed. First Nations request that in regard to government planning processes, dialogue begin with them first to determine how to build the plan. Currently, there is no agreement by First Nations to participate in this process.

2. **Timelines are too tight for meaningful consultation.**

   Meaningful consultation requires relationship building over a long period of time, as well as a commitment to resources for educating the community.

3. **Representation**

   Ktunaxa Kinbasket Treaty Council Land and Resources do not represent First Nations interests; community members represent themselves.

4. **Treaty negotiations**

   Treaty negotiations are undermined by this plan, since government is not willing to address these same issues at the treaty table.

Tourism Sector Focus Group: Summary of Issues

May 1, 2002 in Fernie

1. Recreation access management

- Licensing and identification is needed for all motorized users including ATV's and motorized bikes.
- Designated areas should be identified for motorized recreational off-road use. Use terms to label the area which will encourage respectful use of the environment i.e."Challenge" as opposed to "Sacrifice" or "Play" areas.
- Overland motorized use should not be permitted, and this needs to be enforced.
- Public education must be provided so that the reasons for non-motorized use designations are well understood.

2. Boundary

- SRMMP boundary needs to be expanded to include complete watersheds as a minimum area for planning.

3. Assessment of tenure applications for commercial recreation

- In assessing new commercial recreation proposals consider: carrying capacity and "quality of experience"; compatibility of uses; and certainty and consistency for existing tenure holders. LWBC should not fast track commercial recreation applications but rather assess them more thoroughly to avoid undermining existing businesses.
- Criteria for evaluating the applicant's ability to deliver the most effective economic use of the land need to be developed. LWBC should attempt to achieve a match of interest and territory, and then ensure that proposals are economically viable.
- Commercial recreation operators should seek partnerships to utilize existing backcountry infrastructure.
- Guide outfitter and range tenure allocation methods should be used as models.
- Prior to issuing new commercial recreation tenures, local interests should be consulted to determine potential impacts.
- Existing established commercial recreation businesses are seeking opportunities to convert leases to fee simple ownership. If these opportunities are provided, long term planning and investment will be accommodated.
- Certainty on rules and territory, and consistency within the tourism sector are needed, (one example of inconsistency is in the relative costs of leasing Crown land and the taxation of private land).

4. Address "quality of experience" in SRMMP as follows:

- Conduct carrying capacity research;
- Consider compatibility of activities;
- Provide certainty on rules and territory, and consistency within the tourism sector;
- Carry out a tourism development strategy;
- Protect viewscapes from highways and lakes;
- Provide tourism sector with new opportunities and expansion opportunities, once the "limits of acceptable change" are determined.
- Protect wildlife values by addressing connectivity and habitat management issues (especially in-growth).
- Provide education, and an arbitration and mediation process. Use enforcement as last resort.
- Keep the unique wilderness and wildlife qualities of this area at the forefront, and protect the qualities through regulation.
- Provide a forum for ongoing dialogue between resource users, tourism and local economic development for the purpose of addressing issues and future results based Forest Practices Code objectives.

5. Commercial over use on the Elk River

Existing guiding legislation can be more effectively applied as follows:

- maintain and review guide records;
- limit number of allowable guide assistants;
- tax Canadian out-of-province guides through B.C. business licensing;
- increase license fee;
- require proof of insurance.

Southern Rocky Mountain Management Plan

Synopsis of Focus Group Key Issues

Sectors who brought forth issues are listed after the issue in brackets.

I. Timeline

Completing the plan by June, 2002, does not provide enough time to address the range of issues (Forestry; Mining & Petroleum; Commercial Hunting, Fishing and Trapping; Local Government; Environmental Interests).

II. Legislation

1. The Plan should be legislated and enforced (Mining & Petroleum; Commercial Hunting, Fishing & Trapping; Recreational Hunting and Fishing; East Kootenay Residents Land Use Coalition; Agriculture; Local Government).
2. The Recreation Management Strategy should be legislated and enforced (Forestry; Mining & Petroleum; Commercial Hunting and Fishing; Recreational Hunting and Fishing; Environmental Interests; Agriculture; First Nations; Local Government, Tourism).

III. Boundary Expansion

1. The boundary should be expanded to include complete watersheds as a minimum area for planning (Commercial Hunting, Fishing & Trapping; Environmental Interests; Tourism).
2. Boundary expansion is supported in the case that the plan simplifies operational planning and doesn't increase industrial access constraints and costs; and is not supported if industrial access constraints and/or costs are increased (Forestry; Mining & Petroleum).

IV. National Park Proposal

1. The park proposal is strongly opposed (Mining & Petroleum; Commercial Hunting and Fishing; Recreational Hunting and Fishing; East Kootenay Residents Land Use Coalition; Agriculture; Local Government's constituents).
2. The park proposal is strongly supported (Environmental Interests).

V. Transparency and Representation

The planning process must be transparent and have broad sector representation (Mining & Petroleum; East Kootenay Residents Land Use Coalition; Environmental Interests).

VI. Land Use Certainty

The plan should provide land use certainty for resource users. Goals for certainty are unique to each sector and are as follows:
Resource industry (Forestry, Mining & Petroleum): Access to the resource;
Commercial Hunting, Fishing & Trapping: "Quality of experience";
Recreational Hunting and Fishing: Right to hunt and fish;
East Kootenay Residents Land Use Coalition: Recreational opportunity;
Environmental Interests: Single conservation initiative for the area between Banff/Jasper National Parks and International Peace Park;
Agriculture: Crown grazing opportunities;
Tourism: "Quality of experience".

VII. Implementation and Monitoring

1. Plan should be implemented and have a mechanism for incorporating change and providing flexibility (Forestry; Mining & Petroleum; Environmental Interests; Agriculture; Local Government; Tourism).
2. Plan should provide education, and an arbitration and mediation process (Tourism).
3. Plan should provide a forum for ongoing dialogue between resource users, tourism and local economic development (Local Government; Tourism).

VIII. Scientifically Based Constraints

Management objectives and guidelines should be based on the best available science (Forestry; Mining & Petroleum; Commercial Hunting, Fishing & Trapping; East Kootenay Residents Land Use Coalition; Environmental Interests).

IX. Carrying Capacity

1. Carrying capacity studies are needed to address natural systems and social experience (Commercial Hunting and Fishing; Recreational Hunting and Fishing; Environmental Interests; Agriculture; Local Government; Tourism).
2. The unique wilderness qualities of this area should be kept forefront in planning, and protected through acquisition and implementation of carrying capacities and effective regulation (Commercial Hunting, Fishing & Trapping; Recreational Hunting and Fishing; Local Government; Tourism).

X. Assessment of Crown Land Use Applications

1. Criteria for evaluating the environmental and socioeconomic impacts of commercial recreation proposals are needed (Commercial Hunting and Fishing; Recreational Hunting and Fishing; Environmental Interests; Agriculture; Local Government; Tourism). The evaluation criteria should include:
   - Provincial Stewardship Principles (Local Government);
   - Environmental and social carrying capacity information (Commercial Hunting and Fishing; Recreational Hunting and Fishing; Environmental Interests; Agriculture; Local Government, Tourism).
   - Economic viability assessment (Commercial Hunting, Fishing & Trapping; Tourism).
   - Compatibility with existing uses (Commercial Hunting, Fishing & Trapping; Agriculture; Tourism).
   - Protecting the areas' unique wilderness experience product and underlying resource (Commercial Hunting, Fishing & Trapping; Recreational Hunting & Fishing; Local Government; Tourism).
   - Certainty for existing tenure holders (Commercial Hunting, Fishing & Trapping; Agriculture; Tourism).
   - Consistency within the tourism sector (Commercial Hunting, Fishing & Trapping; Tourism).
   - Consultation with local interests to determine impacts (Commercial Hunting, Fishing & Trapping; Tourism).
2. Tenure allocation methods currently used for Guide Outfitting and Range should be used as models for developing an allocation method for commercial recreation (Commercial Hunting, Fishing & Trapping; Local Government; Tourism).
3. Commercial recreation planning should be high priority (Commercial Hunting, Fishing & Trapping; Recreational Hunting and Fishing; Environmental Interests; Agriculture; Local Government; Tourism).
4. Commercial recreation tenure allocation must be linked to strategic direction provided in the SRMMP (Local Government, Tourism).

XI. Recreation Access Management

1. Detailed planning is required to resolve existing motorized/non-motorized use conflicts (Commercial Hunting, Fishing & Trapping; Recreational Hunting and Fishing; Environmental Interests; Local Government).
2. Road closures need to be legislated and enforced. This is not an industry responsibility (Forestry, Mining & Petroleum).
3. Land-use certainty and effective regulation should be provided to facilitate use of the backcountry for economic development in a context of sound environmental stewardship (Local Government; Tourism).
4. Overland motorized recreation should not be permitted (Agriculture; Local Government; Tourism).
5. Overland motorized recreation should not be permitted, except for snowmobile use under sufficient snow pack conditions in designated areas (Environmental Interests).
6. Cost/benefit analysis of activities should be conducted, and only activities that are of an overall benefit should be accommodated, e.g. ATV use (Local Government).
7. Designated area(s) should be identified for motorized off-road use (Agriculture, Tourism).
8. Licensing and identification is needed for all motorized users, including ATV's and motorized bikes (Local Government; Tourism).
9. Public education must be provided so that the why's and wherefore's of non-motorized use designations are well

understood (Tourism).

10. Motorized recreation is not compatible with Crown grazing (Agriculture).
11. Cumulative impacts of motorized use on wildlife must be addressed (Commercial Hunting, Fishing & Trapping; Environmental Interests).
12. Non-motorized designations on Crown land don't account for the non-availability of the protected areas for motorized use, and have a negative impact on industrial users (Mining & Petroleum).
13. Backcountry River Corridor designation should be implemented on the Elk, Wigwam, Bull and Flathead Rivers to ensure non-motorized use (Environmental Interests; Local Government).
14. Backcountry River Corridor designation is inconsistent with some present land uses (e.g. existing roads) and appears arbitrary and poorly defined (Forestry; Mining & Petroleum).
15. Access Management Area plans should be maintained/implemented (Commercial Hunting, Fishing & Trapping; Environmental Interests).
16. Snowmobile encroachment at Frozen Lake, Montana from B.C. needs to be addressed (Montana).

XII. Conservation of Wilderness and Wildlife Habitat Values

1. Outstanding wilderness values establish this area as unique and provide the "quality of experience" that draws both tourists and residents to this location. Wilderness and wildlife values must be addressed (Commercial Hunting, Fishing & Trapping; Recreational Hunting and Fishing; Environmental Interests; Local Government; Tourism).
2. Wildlife base case inventory needs to be established to provide a basis for evaluating proposed activities (Forestry; Commercial Hunting, Fishing and Trapping; Recreational Hunting and Fishing, Environmental Interests).
3. Funding for long term wildlife research should be identified in this plan (Forestry; Environmental Interests)
4. Wildlife habitat enhancement should be continued, especially in terms of addressing forest in-growth (Commercial Hunting, Fishing & Trapping; Recreational Hunting and Fishing; Environmental Interests; Agriculture; Tourism).
5. Domestic sheep and llama threaten native wildlife populations with potential disease transfer, and should not be introduced in the plan area (Commercial Hunting, Fishing & Trapping).
6. Big horn sheep herd that frequents the Woods Ranch Wildlife Management Area in Montana is potentially threatened by domestic sheep close to the border in B.C. (Montana).
7. Grizzly bear is protected in Montana due to low population numbers, and access is managed to protect habitat values. Grizzly bear management in B.C. is of concern (Montana).
8. Permanent backcountry facilities for commercial recreation must be minimized (Commercial Hunting, Fishing & Trapping; Recreational Hunting and Fishing; Tourism).
9. Elk Valley private land development is impacting grizzly bear and elk north-south migration. Three areas providing potential connectivity across Highway 3 need to be addressed (Recreational Hunting and Fishing; Environmental Interests).

XIII. Fisheries

1. Guided angling over use on the Elk and Wigwam Rivers is depleting the Westslope Cutthroat Trout population due to ineffective fisheries regulation (Commercial Hunting, Fishing & Trapping; Recreational Hunting and Fishing; Environmental Interests; Tourism; Local Government).
2. Fisheries inventory should be conducted (Commercial Hunting, Fishing & Trapping; Recreational Hunting and Fishing).
3. Flathead River Bull Trout and pure strain Westslope Trout populations should be addressed (Montana).

XIV. Water Quality

In Montana, the Flathead River is a designated 'Wild and Scenic River' which stipulates that no activities can be approved in the corridor unless they protect or enhance the river. The protection of Flathead River water quality in B.C. is of concern (Montana).

XV. Fires

In Montana, there is concern over fires starting in B.C. and spreading across the border to private land (Montana).

XVI. Noxious Weeds

Noxious weeds must be addressed (Forestry; Commercial Hunting and Fishing; Agriculture).

XVII. Livestock Grazing

Livestock grazing should be accommodated and increased to historic levels (Agriculture).

XVIII. Agricultural Land Reserve

Agricultural Land Reserve lands should be identified and potential future agricultural use of these lands should be accommodated (Agriculture).

SOUTHERN ROCKY MOUNTAIN MANAGEMENT PLAN

APPENDIX 15.0

INTER-AGENCY LIAISON GROUP AND PROJECT TEAMS

Southern Rocky Mountain Management Plan
Inter-Agency Liaison Group

First Nations
Thomas Munson
Ray Warden

Ministry of Sustainable Resource Management – Core SRMMP Project Team
(*below*)

Ministry of Forests, Cranbrook Forest District
Tony Wideski
Mike Black (alternate)

Ministry of Forests, Wildlife
Bruce McLellan

Ministry of Water, Land and Air Protection
Wayne Stetski
Greg Chin (alternate)

Ministry of Energy and Mines
Andrew Whale

Ministry of Agriculture
Mike Malmberg

Land and Water BC
Herb Hess

Regional District of East Kootenay
Bob Whetham

Department of Fisheries and Oceans
Bruce MacDonald

Parks Canada
Paul Galbraith

Waterton Lakes National Park
Bill Dolan

Alberta Ministry of Sustainable Resource Development, Land and Forest Division, Blairmore
Cory Wojtowicz

Alberta Ministry of Community Development, Blairmore
Mike Taje

PROJECT TEAM
SOUTHERN ROCKY MOUNTAIN MANAGEMENT PLAN

CORE PROJECT TEAM

NAME	TITLE/EXPERTISE - LOCATION	CONTACT INFORMATION
Tom Volkers	Project Team Leader/Forestry – Cranbrook	Tom.Volkers@gems9.gov.bc.ca 250-426-1731
Rob Neil	Planner/Wildlife - Cranbrook	Rob.Neil@gems6.gov.bc.ca 250-489-8549
Dave Grieve	Planner/Subsurface Resources – Cranbrook	Dave.Grieve@gems6.gov.bc.ca 250-489-8514
Kevin Weaver	Tourism Manager - Cranbrook	Kevin.Weaver@gems2.gov.bc.ca 250-489-3906
Darcy Monchak	Planner/Forestry – Golden	Darcy.Monchak@gems4.gov.bc.ca 250-344-7505
Pam Cowtan	Land Use Planner - Cranbrook	Pamela.Cowtan@gems4.gov.bc.ca 250-489-8524
Peter Davidson	Research Protection Advisor Ktunaxa-Kinbasket Treaty Council	pdavidson@kktc.ca 250-417-4022

TECHNICAL SUPPORT GROUP

NAME	TITLE/ROLE - LOCATION	CONTACT INFORMATION
Ken Gorsline	Regional Planning Manager – Nelson	Ken.Gorsline@gems3.gov.bc.ca 250-354-6350
Sharon Ferguson	Regional Administrative Assistant – Nelson	Sharon.Ferguson@gems9.gov.bc.ca 250-354-6920
Kelly Lode	Administrative Support	Kelly.Lode@gems4.gov.bc.ca 250-489-8540
Per Wallenius	GIS Data Management - Nelson	Per.Wallenius@gems9.gov.bc.ca 250-354-6850
Russ Hendry	Multiple Accounts Analysis Forester – Invermere	Russ.Hendry@gems9.gov.bc.ca 250-342-4207
Gord McAdams	Tourism Planner/RMS Project Team member – Nelson	Gordon.Mcadams@gems4.gov.bc.ca 250-354-6911
Steve Flett	Tourism Planner/RMS Project Team member – Nelson	Steve.Flett@gems8.gov.bc.ca 250-825-1128

PROJECT TEAM
RECREATION MANAGEMENT STRATEGY
Revised January 15, 2003

NAME	TITLE – LOCATION	CONTACT INFORMATION
Kevin Weaver	RMS Project Team Leader/Tourism Manager – Cranbrook	Kevin.Weaver@gems2.gov.bc.ca 250-489-3906
Gord McAdams	Tourism Planner - Nelson	Gordon.Mcadams@gems4.gov.bc.ca 250-354-6911
Steve Flett	Tourism Planner - Nelson	Steve.Flett@gems8.gov.bc.ca 250-825-1128

APPENDIX 16.0 Public Review Summary Report

I. Introduction

The public review draft (the "draft plan") of the Southern Rocky Mountain Management Plan (the "SRMMP") was released to the public February 17, 2003. The draft plan was made available to the public through the SRMMP website[1], at three open houses held February 24, 25 and 26 in Cranbrook, Fernie and Elkford, respectively, and for viewing at the Cranbrook office of the Ministry of Sustainable Resource Management. The public review period concluded on April 15, 2003.

A number of public consultation initiatives had been undertaken over the previous 15 months, as part of the development of the draft plan. These are summarized in the introduction and appendices to the SRMMP and elsewhere on the SRMMP website.

The Recreation Management Strategy (RMS) was run as a separate process to the SRMMP, but where the RMS project area overlaps the SRMMP area the results were incorporated as section 7.1 in the draft SRMMP. The RMS process utilized a stakeholder table, which negotiated draft access zonations for recreation. Previous opportunities had been provided to the table members to review draft RMS maps, but this was the first opportunity for the general public to comment on these maps.

In all over 300 written submissions on the draft SRMMP were received during the review period. They were submitted in a variety of forms, including:

- comment sheets completed and submitted at one of the three open houses
- comment sheets completed and mailed at a later date
- website comments link
- emails
- letters
- faxes

The submissions covered a broad spectrum of interests and opinions, and covered most of the topics in the draft SRMMP. They included input from individuals, organizations, corporations and local governments. Those who provided submissions had strong and genuine feelings about resource management and land use in the southern Rocky Mountains.

A major submission from First Nations was not treated as part of the public input and is being reviewed and considered separately. This reflects the special status of First Nations in the process.

Submissions from other government agencies were also received before and during the public review period, but they are not included in this synopsis of public comments.

---

[1] http://srmwww.gov.bc.ca/kor/srmmp/srmmp.htm

II. Handling of comments

The SRMMP project team compiled, collated and summarized all of the 300+ submissions. In summarizing the submissions, and the individual comments contained within them, there was no attempt to be statistical. Individual comments were compiled and grouped into topic areas (most of these topics show up in this synopsis as alphabetically-arranged headings). Every comment was indexed to the submission(s) in which it was contained.

All comments were given consideration for possible revisions to the draft plan. In so doing, we classified the individual comments into five categories. Some categories could not be considered for possible plan revisions. These included comments which were vague, or which provided us with an opinion but no indication of how to address the concern, along with those which were beyond the scope and/or defined limits of the planning process. These comments were all discussed by the project time, but ultimately no direct action could be taken on them, except in some cases to highlight them as issues for government. A record of the discussion was noted on many of these comments.

All other comments (i.e., those which could be considered for potential revisions) were discussed by Project Team members, and, where appropriate, a change to the wording of the draft plan was made. The rationales for our decisions with respect to the individual comments were noted throughout.

The purpose of this document is to provide a brief synopsis of all the comments we received. It does not reflect every submission, nor the actions related to the comments. Those who would like to look at the actual submissions and related information are requested to contact the Ministry of Sustainable Resource Management at (250) 489-8540 or through the SRMMP website to arrange a viewing.

III. Synopsis of comments by topic (arranged alphabetically)

i. BALANCE (see also SUSTAINABILITY)

The question of how well the draft SRMMP achieved a balance was one of the more contentious areas of input. Some felt that the original priorities of the Southern Rocky Mountain Conservation Area had been subordinated to an economic development priority. Others were pleased to see a change in emphasis from conservation to balanced and sustainable development. While some felt that balance had been achieved, there were others who did not. Among those who felt a balance had not been achieved some felt the draft was biased toward economic development, while others felt that conservation was favoured.

We heard from several people that the economic value of keeping the landscape in its wild state should not be forgotten. We were also told of the importance of conducting carrying capacity studies and considering cumulative impacts. Some others pointed out that wildlife, industry and recreation co-exist successfully in the Elk valley. There was one comment concerned that the Special Resource Management zones from the East Kootenay Land Use Plan did not appear in the SRMMP.

Some respondents from industrial sectors were concerned over the relative number of pages in the draft for various resource values, suggesting that the importance of industry was not being recognized. Conversely, some comments reflected a concern that the conservation chapter was not in a more prominent location in the draft plan.

ii. BOUNDARIES

There continued to be some concern over the fact that parts of the Elk and Bull River drainages were omitted from the plan, especially considering that the Recreation Management Strategy (RMS) for the east side of the former Cranbrook Forest District included those areas. On the other hand, some respondents preferred to wait until implementation of the final SRMMP, and an assessment of plan performance, before expanding the plan area into the remainder of these drainages.

iii. CONNECTIVITY

There was both praise and criticism of the draft SRMMP's new "matrix" approach to connectivity. Some felt that the method would not meet the stated intent. Identified weaknesses included over-emphasis on avalanche tracks and a contention that fragmentation would not be halted. Others, however, were pleased to see the demise of previous broad corridors in favour of site-specific ecosystem attributes and features.

There was a common concern expressed for restricting motorized recreation access, structures and tenures in connectivity zones. Some wanted to extend access restrictions to industrial activity as well. The importance of a corridor of "safe passage" for wildlife between the Flathead and Banff was raised by some. Therefore, research showing that some animals do not cross Highway 3 was highlighted as a serious concern needing attention, although some respondents expressed scepticism over these findings. Movement of species between Canada and the US, along the Flathead corridor, was also identified as being important.

iv. CONSERVATION (GENERAL)

There were many comments emphasizing the important need for the plan to do a good job of protecting environmental values. These included identification of the need to make conservation values the highest priority, to employ the precautionary principle and to preserve wildlife in a natural state for future generations.

There was considerable support for the conservation provisions in the draft plan, some stating the plan provided better management (than previous). However, there were some criticisms that the draft plan did not do a good enough job of protecting wildlife, and/or that additional measures were needed, sometimes in specific areas like Landscape Unit

(LU) C18 in the Flathead. Comments from the US expressed concern that the draft plan did not adequately address potential impacts to the Flathead region in Montana.

There was some doubt expressed that wildlife populations are actually threatened, and the point was made that multiple use of the backcountry has worked well.

v. FIRST NATIONS

As noted above, the submission from First Nations on the public review draft was not considered as public input and is not referred to here.

Public comments concerning First Nations issues were relatively few, but included the recommendation that steps be taken to address outstanding First Nations concerns with the planning process.

vi. FORESTRY

The need for forestry activities to address environmental values (riparian, biodiversity, core habitats, water, ungulate winter range, connectivity, etc.) was identified in many submissions.

Several perceived weaknesses were identified with the forestry provisions of the draft plan. The fact that the Issues section of Chapter B.4.0 contained only one issue was one deficiency pointed out; additional issues were identified, including problem forest types, pine beetle, overstocked types and others. Additions to the intent statements, including setting reasonable targets and maintaining Annual Allowable Cut, were also suggested. Doubt was expressed that the draft plan optimized or provided for economic development. The need to complete the socio-economic analysis (SEA) was indicated as a prerequisite to completion of the final plan.

Others felt that the impacts of forestry were not dealt with adequately in the draft plan or that development was taking precedence over sustainability.

The timber Enhanced Resource Development Zone (ERDZ) provisions received some support, but a lack of clarity in the implementation of ERDZs, along with the perception that the proposed ERDZs would be ineffectual, were pointed out. Another perceived weakness was a lack of clarity as to what constitutes a healthy forest sector.

vii. GUIDE-OUTFITTING

We received suggestions that the status of guide-outfitting be enhanced in the draft plan. For example, some respondents specified that guide-outfitting should be given the "same rights" as mining and logging (i.e., equivalent level of certainty, and recognition of the value of the industry), that mining and logging need to be required to "coexist" with guiding, and also that guide-outfitting should not be grouped as a recreational tourism activity.

Needs identified for this sector included undisturbed wilderness, healthy wildlife populations and exclusivity of tenure. Limitation on motorized access was a critical issue. Concern over issuance of other Crown land tenures which overlap territories was expressed.

We heard both opposition to, and support for, the concept of not allowing guide-outfitting to expand in LU C23. Some respondents were unhappy that guides are able to access non-motorized areas by vehicle to supply their camps.

viii. HUNTING AND FISHING

Several people took exception to the reference in the draft plan concerning the social non-acceptance of hunting. A reference to increasing competition between resident and non-resident hunters in the draft plan was also disputed.

Angling-guide pressure was raised as a potential threat to the fisheries resource and the sport itself, especially on the Elk River.

ix. IMPLEMENTATION

The importance of effective plan implementation, and the need for appropriate monitoring and enforcement, were widely recognized. However, there were concerns expressed that the draft plan did not provide clear indications as to how objectives would be implemented.

The need for the final plan to be able to incorporate and adapt to new information was also identified. A related issue, plan amendment, was also raised: the SRMMP should be revisited (e.g. every five years or at request of other ministries). A process for variances, without invoking major amendment processes, was also requested.

x. INDUSTRIAL ACCESS

While some respondents felt that an industrial access plan was needed, for environmental benefit, others were concerned about the possible implications to industry, and wanted clarification as to what such a plan would entail. There was one response in favour of maintaining or expanding access in general, and another felt that permitting processes already deal adequately with industrial access management.

Statements in the draft plan which referred to increasing or uncontrolled industrial access (as a potential impact on conservation and tourism values, for example) were strongly questioned, and identified as being biased. Improvements to riparian guidelines were suggested, because it was felt that road or crossing restrictions, as written, would not always have been the best for the environment (see also RIPARIAN).

Road reclamation and deactivation, along with access controls, were identified in several submissions as potential methods to limit road densities and impacts. Some people felt these are strictly industry responsibilities.

xi. MAPPING AND DATA

The quality (lack of resolution) of the .jpg maps on the website was criticized. Some felt the maps, in general, were too complex for the lay person, or that the material presented at the open houses was overwhelming.

The need to be collecting new data over time, so that when the plan is revisited the best information will be available, was identified.

One industrial user indicated that the maps will be incorporated into company planning.

A specific concern was raised over use of mineral potential mapping, which was described as outdated and flawed.

Several people found mapping errors and pointed them out to us.

xii. MISCELLANEOUS ISSUES RAISED:

- need for a BC-Montana cooperation agreement on the Flathead
- perceived inadequacy of the consideration given to US interests in the plan
- recognition of the importance of resource industries and integrated management
- undesirability of allowing the threat of international boycotts and funded publicity campaigns to drive the plan
- need to avoid statements that bind adjacent private landholders to the plan
- need to provide the comparative costs of tenure for various activities
- need to provide a history of the plan area

xiii. OLD AND MATURE FOREST

The need for protection of old growth forest areas was identified. Provisions of the plan were both praised and criticized. Specifically, some were confused about the process for approving access through an old-growth management area (OGMA), while another comment did not support the overlap of OGMAs with riparian areas.

One commenter felt that the basal area requirement for mature stands needs to be variable.

xiv. PARKS

A number of respondents expressed support for a National Park in the Flathead. It was suggested that only a park would provide adequate protection for the east side of the

Flathead drainage in BC. Others expressed their opposition to a National Park, and included statements like "we have enough parks" and "when does park creation stop?"

xv. PROCESS

There was a divergence of opinion on whether or not the planning process had been open, transparent and fair. Some felt that public engagement had not been adequate, while others expressed appreciation for the opportunities to participate in the process.

Advice to MSRM, in relation to the planning process, included:

- legislate the plan
- reject anecdotal information
- ensure there is broad public and community support
- don't give in to "anti-use" groups
- include potential economic impacts as well as benefits
- put draft plan out for another 60-day review (for SEA and other outstanding issues)
- provide better information about what happens after public review
- include current environmental policies and laws (as opposed to intent statements)
- state clear government position on the National Park proposal, the Trans Canada Trail and other issues
- provide a variance protocol for forest development
- identify areas outside the plan area where there are sensitive habitats and there is a need for cooperation

xvi. RANGE

There was concern expressed that this relatively small industry was being given priority over conservation in the plan area. A concern was expressed that livestock grazing in the alpine is undesirable.

Most other range-related comments dealt with the interaction of forestry and range, in particular a desire to ensure that conflicts between the two sectors are minimized. For example, it was noted that some range issues, like potential grazing expansion onto Crown land, could have impacts on the forestry sector.

One specific recommendation was received to carry out a major range enhancement program in the Bull River.

xvii. RECREATION MANAGEMENT STRATEGY

This was the third opportunity to review the draft Recreation Management Strategy (RMS) maps for stakeholders at our "Cranbrook east" workshop table, but the first opportunity for the general public to make comments. Nevertheless, most of the comments came from people who had participated in the process, with only 10 new members of the general public making comments. Several trends were identified in the comments:

- The majority of comments were a restatement of concerns expressed earlier where the individual or group did not support our previous recommendations.
- The majority of the concerns were from motorized users
- There were slightly more comments related to summer use than to winter use
- Some mapping errors were noted in the comments
- Several people recommended small changes which were of low consequence to other interests
- Many continued to suggest changes that were beyond the mandate of the RMS process
- There was strong support for commercial recreation users to be treated the same as the general public

While many comments received expressed general support for the draft RMS maps and strategy, many other people were not happy with this section of the SRMMP. The largest area of dissatisfaction was in relation to limitations on motorized use, both summer and winter. However, much of this concern related to the inability of the RMS process to address the Access Management Areas legislated by the Ministry of Water, Land and Air Protection for wildlife management purposes. The second most contentious area was the closing of the southern passes to Alberta to motorized use; however, this is consistent with much public opinion and consistent with Alberta's access plans, with the exception of one pass being open on the Alberta side in the summer.

xviii. RIPARIAN

We received some positive comments for the riparian sections of the draft plan, in particular the road restrictions in the Flathead enhanced riparian zone. There was a question raised as to who will be responsible for reclaiming roads in the riparian, and where the money will come from. The ability to re-establish old river crossings as temporary crossings was requested. One respondent pointed out that the riparian management provisions were inconsistent with the Forest Practices Code (many S4, S5 and S6 streams in the plan area appeared to require reserve zones).

xix. SETTLEMENT

Some respondents took issue with the claim that settlements in the area are growing. The decision to not permit settlement in the Flathead drainage was lauded.

The relationship to private land was noted, specifically the fact that population pressures impact private land, whose management has implications for Crown lands. There was some concern that any Crown lands made available for future settlement must be affordable.

xx. SOCIO-ECONOMIC AND ENVIRONMENTAL ANALYSIS (SEEA)

Some felt that the draft plan couldn't be properly reviewed in absence of a completed SEEA; this translated to a request for a second review period before the plan is approved.

We heard that the SEEA base cases need to better account for some of the positive impacts of coal mining on the economy and the environment. One respondent felt that the base cases should be part of the draft plan, and not as stand-alone documents.

xxi. SUBSURFACE RESOURCES

We received comments expressing concern that mining and oil and gas appear to take precedence over other values. It was requested that the draft plan's conservation objectives be a legal obligation and/or a requirement for exploration and development activities. Some respondents requested an outright ban on these activities in parts or all of the plan area.

On the other hand, the subsurface resource provisions were a source of cautious optimism in some cases. It was pointed out that the objectives address some of the long-standing concerns of the mining sector and imply a government commitment to sustaining the industry. The need to recognize that subsurface resource exploration often has seasonal requirements, along with a request for flexibility in other resource objectives, was pointed out by some. Maintaining access to specific coal deposits was a concern to some respondents. We received a recommendation to broaden our scope to include industrial mineral opportunities. Lastly, we were told that the bulk of the conservation objectives in the draft plan can be accommodated in a major resource company's development plans, although there was a request for more detail on assessments needed for approval.

xxii. SUSTAINABILITY (*see also* BALANCE)

Most comments aimed at sustainability issues tended to take a negative perspective, specifically that the draft plan did not adequately ensure sustainability of natural values. The overall goal of facilitating sustainable economic development was not considered to be appropriate by some respondents. The Ministry of Sustainable Resource Management's draft sustainability principles were criticized, because it was felt they are focused only on economic sustainability. However, one respondent felt that the final plan will serve as a good starting point for sustainable management.

xxiii. TOURISM

There was reasonable support for the tourism provisions in the draft plan. The need to emphasize quality of experience (over quantity of users) was expressed by some people. Some felt that tourism based on the natural environment will provide the long-term economic foundation in the plan area. However, motorized restrictions in the RMS were felt by some respondents to be detrimental to tourism.

On the other hand, some felt that provisions for growth in tourism are unwarranted, and/or are potentially detrimental to other activities.

xxiv. TRANS CANADA TRAIL (TCT)

The only TCT-related statement in the draft SRMMP (page 15) arguably attracted more attention than any other single provision. Most of the respondents felt the statement was inappropriate, and requested that it be changed. Some of these expressed support for the upper Elk valley route, the one currently registered with the TCT Foundation. However, there was also some support for the statement as worded in the draft.

xxv. TRAPPING

As with hunting, comments concerning negative social perceptions of trapping were described as inappropriate, as were negative statements about harvesting pressures on wildlife populations and lack of selective harvesting. On the other hand, we heard the view that any increases in trapping activity would be detrimental to the wildlife resource.

xxvi. UNGULATES AND UNGULATE WINTER RANGE (UWR)

Most of the comments on ungulates and UWR pertained to the interaction of moose and snowmobiles. In particular, the protection of moose was not considered adequate explanation for snowmobile restrictions in the RMS.

Impacts of forest harvesting activities on UWR were felt, by some, to be overstated in the draft plan, and the validity of the seasonal restrictions (best management practices) for forestry was questioned.

We were also advised to look after food sources for ungulates, and to develop a strategy to reduce highway and railway mortality.

xxvii. VISUALS

Based on two specific submissions, visual management outside of the front-country is not supported. One respondent supported the provision that approved mining activities may exceed Visual Quality Objectives.

xxviii. WATER

There was some concern expressed about the draft plan's ability to protect aquatic systems. With respect to domestic water systems there was also concern that the plan is not clear on where responsibility falls for aspects such as maintenance and contingency. Divergence of the Best Management Practices from the Higher Level Plan was noted, along with some specific concerns about statements in the draft plan which ascribed watershed damage to industrial users.

xxix. WIDE-RANGING CARNIVORES

The impact of motorized access on grizzly bears was the most common concern of our respondents. Restrictions on motorized activities were generally the favoured approach, although there was some scepticism about this approach, including a specific allegation that the annotated bibliography in Appendix 24.1 is biased against motorized users. As with connectivity, there were also suggestions to limit structures or tenures in grizzly bear habitat, or ensure that structures or camps are ecologically sensitive.

IV. CONCLUSION

If there was one common theme contained in the submissions it was a respect for the land and its resources. Differences lay in how best to achieve a sustainable future for the economy, environment and social fabric in this important area. "Balance" is never going to be easy to achieve, but the information, constructive criticism and advice provided to us in the public review phase, and indeed throughout all the stages of consultation, has helped us significantly.

The project team would like to thank all those who provided input. Your review of the draft SRMMP is much appreciated. It is important to us that all who wanted to comment on the public review draft of the SRMMP took the opportunity to do so. Feedback from a wide spectrum of interested individuals has helped us in assessing our efforts and in ultimately achieving a balanced product.

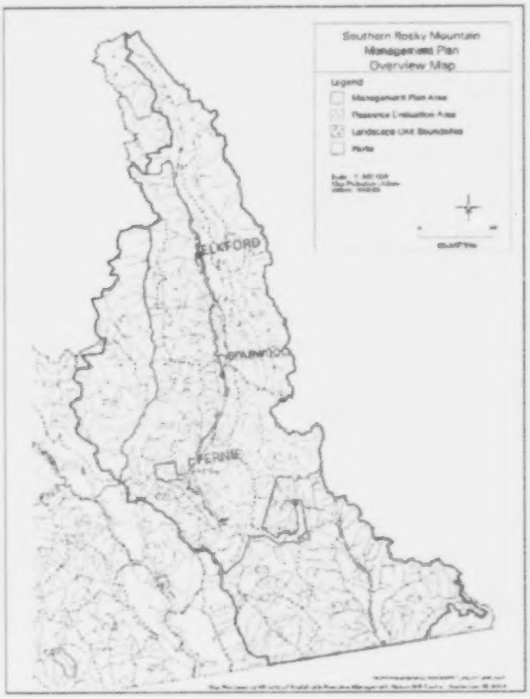
Appendix 17.0 – Recreation Management Strategy ("RMS")

17.1 RMS Summary

This summary provides background information relative to the development of the recreation management direction presented in Section 7.1 of the Southern Rocky Mountains Management Plan (SRMMP).

RMS Planning Area

The RMS Planning Area covers Landscape Units C14-28 and C38 and corresponds to the SRMMP "Resource Evaluation Area"


Southern Rocky Mountain
Management Plan
Overview Map
Legend
Management Plan Area
Resource Evaluation Area
Landscape Unit Boundaries
Parks
ELKFORD
SPARWOOD
FERNIE

Summary of the Planning Process and Process Timelines

Background

- Modelled after the Golden Backcountry Recreation Access Plan (GBRAP)
- Best available information used and timelines reduced from Golden model
- Consultative decision making process striving for overall agreement, not consensus
- Established a multi-stakeholder table to provide input
- Recommendations to government from process will be based on best information available and with defensible justification
- Transparent and open process

- Builds on first phase of the "District Recreation Access Plan" (DRAP), an internal government mapping process done by resource line ministry staff with minimal public input. An atlas at a scale of 1:250,000 was compiled of all the existing land resource values pertinent to recreation interests. Information was presented as a series of approximately 20 transparent overlays accompanied by Value Statements for each Landscape Unit in the Nelson Forest Region. The first phase of DRAP did not produce any zonations or management direction.
- Process ran concurrently with Southern Rocky Mountain Management Planning process (SRMMP) and encompassed an area larger than the SRMMP area, ie. an area equivalent to the "Resource Evaluation Area" of the SRMMP. Recommendations from the RMS process to be incorporated into, and implemented by, the SRMMP

RMS Planning Team

- Kevin Weaver, Regional Tourism Manager, Ministry of Sustainable Resource Management (MSRM) – Team leader
- Steve Flett, Tourism Planner, MSRM
- Gord McAdams, Tourism Planner, MSRM

Technical Support

- Sharon Ferguson, Regional Administrative Assistant, MSRM
- Kelly Lode, Administrative Support, MSRM
- Per Wallenius, GIS Data Management, MSRM
- Regional GIS MSRM staff
- Margaret Bakelaar, Planning Section Head, MSRM

Process

- Potential stakeholders advised of process November 2001 through direct contact by phone, email or through public advertisements in local newspapers
- Focused on representation from groups that had a local presence
- Public Open Houses held in Fernie and Cranbrook December 12 & 13, 2001. Base information maps provided and staff were available to answer questions and discuss concerns. A sign-in sheet established the initial stakeholder list for future communication
- Meetings were scheduled with local interest groups to develop the sector representation for the stakeholder table
- Municipal Councils, Regional District Directors, Economic Development Commissions and Chambers of Commerce were encouraged to participate
- Workshops to discuss recreation management by landscape unit began in February and continued to April 2002. Maps and a note taker equipped with a computer, projector and screen were made available at all workshops. Voting on issues was avoided. Shortly after each workshop, stakeholders were sent copies of notes and these were reviewed as a first agenda item at the next meeting.
- Steps to produce Draft Zoning Maps included:
    - Review Value Statements and Resource Maps from District Recreation Access Plan
    - Note existing legal designations
    - Review "Present Use" maps
    - Review Comments and Map Notations from RMS Workshops

  - Rough in zoning maps (winter and summer) from known information
  - Address areas of obvious imbalance where feasible
  - Confirm compliance with Kootenay Boundary Land Use Plan Implementation Strategy
  - Check for compatibility with adjacent Landscape Units
  - Check against key resource values (note inconsistencies and compromises)
  - Check compatibility with other jurisdictions (USA, Alberta, Parks, Private Land)
  - Email maps to stakeholders and post them on RMS website
- RMS Planning Team met with the Interagency Liaison Group (IALG) to discuss Draft Maps
- Comments were solicited on the Draft Maps (119 comments were received from 14 sector groups), a summary was sent to stakeholders and the IALG, and changes were made to maps where appropriate
- A final workshop was held to review the changes to the Draft Maps and the final Draft Maps were provided to the SRMMP project team for inclusion into Plan Section 7.1

Landscape Unit Designations and Recommendations resulting from the consultation process

LANDSCAPE UNIT C14 – WIGWAM RIVER

Location:

The Wigwam River LU is located in the south-west corner of the plan area, bounded by Inverted Ridge on the east and the heights of the Galton Range to the west. LU 14 encompasses the upper to mid reaches of the Wigwam River. Primary physical attributes are rugged scenic mountains, alpine and sub-alpine with few basins and lakes, meandering river and riparian meadow complexes. The unit is currently very remote with road development limited to the main valley bottom and through Galton Pass at the south-eastern corner. Other road accesses are restricted to industrial development activities.

Recreational Facilities and General Use Patterns:

Of the 23 backcountry recreation activities considered in the Recreation Management Strategy (RMS), 17 presently occur in this landscape unit The Ministry of Forests currently manages two Recreation Sites and access trails at Snowshoe and Baldy Lakes. The valley bottom road provides access for snowmobiling, hiking, hunting, fishing and wildlife viewing. No formal campsites exist in the valley bottom but camping does take place adjacent to the road. This unit receives low to moderate recreational use, primarily for fishing, hiking, hunting, snowmobiling and limited ski touring. Commercial guide outfitting operations are active within the valley, otherwise no tenured commercial recreation operations currently exist in the unit. Wildlife values are high. There is extensive ungulate winter range along the river and the remoteness of the landscape optimizes the suitability for wildlife. Current users value the high wilderness values/ remoteness of the unit for the recreation experience that it provides.

Desired Future Condition:

The Wigwam River Landscape Unit (LU) will be managed for a moderate range of public and commercial recreation opportunities. As most of the area is not presently roaded, the unit will be provide significant opportunities for non-motorized recreation. Existing motorized use will continue to take place on the east side road (year round) and the Galton/Rabbit Pass (summer only). Motorized summer use will occur on road surfaces and limited areas for camping adjacent to the surface (not in meadows or forest).Current winter motorized use of the east side road will continue while industrial accesses will remain unavailable for public use. Lower elevations of the unit are important winter range, which will place some restrictions on use. Existing guide outfitter structures are an acceptable use, however throughout the unit permanent structures will be scarce to maintain and conserve the remote wilderness values of the area.

RMS Zoning Recommendations:

Summer:

- RA2 (seasonal access) on the existing east side road and Galton Pass road.
- RA1 (non-motorized access) throughout the remainder of the area.
- RH1 (no landings desired)
- RM1 (no development)

Winter:

- RA2 (seasonal access) on the existing east side road.
- RA1 (non-motorized access) throughout the remainder of the area.
- RH1 (no landings desired)
- RM1 (no development)

LANDSCAPE UNIT C15 – LODGEPOLE – BIGHORN

Location:

The Lodgepole-Bighorn LU is bounded by the Galton Range on the west, the Flathead Ridge on the north, Inverted Ridge on the south and the ridge running between Harvey and Cabin Passes on the east. All main drainages that flow into the Wigwam River are within this unit. This unit is approximately 44,000 hectares of which almost 41,000 is Crown land. There are neither population centres nor highways throughout the area. Major forest access roads traverse the unit: Wigwam, Bighorn and Lodgepole Creek roads.

Recreation Facilities and General Use Patterns:

Of the 23 outdoor recreation activities considered in the Recreation Management Strategy (RMS) 17 presently occur within this LU. No commercial recreation tenures exist in the unit, however tenured guided hunting and angling does take place. This LU contains major access corridors and specific areas with extensive road networks. The unit provides two major through routes to the Flathead valley as well as providing destination areas for both snowmobile and ski touring activities. Use patterns have been established over time and overlapping non compatible activities are limited. A snowmobile cabin at Cabin Pass serves as a destination for winter use. Ski tourers utilize areas south of the pass while snowmobilers use areas north of the pass. Alpine ridges and basins in the central portions of the unit are popular with both summer and winter non-motorized users. Access Management Areas (AMA's) cover an extensive area in the Wigwam Flats and north of lower Lodgepole Creek. Motorized access is constrained in this AMA.

Desired Future Condition:

The Lodgepole-Bighorn LU will be managed for a range of public recreational opportunities. Balance and integration of existing and potential recreational use will be the goal. This unit will see a variety of seasonal uses based upon separation of non compatible activities. Existing motorized use will generally continue in the winter while constraints will apply in ungulate winter range and alpine basins and ridges. Most of the area will be available for snowmobiling with a few key locations catering to ski tourers.

Summer access will be non-motorized throughout most of the unit. Major forest roads providing through routes will be open for motorized activities with constraints on some minor access roads.

RMS Zoning Recommendations:

Summer:

- RA2 (seasonal access) on existing road network north of Cabin Pass, road through Wigwam Flats and minor roads in Bean/Pioneer Creeks and South Lodgepole Creek.
- RA3 (unrestricted motorized access) on Lodgepole, Wigwam and Bighorn forest roads.
- RA1 (non motorized access) throughout the remainder of the area.
- RH1 (no landings desired)
- RM2 (limited development

Winter:

- RA1 (non motorized access) on existing AMA's, identified ungulate winter range, alpine ridges and basins north of Bighorn Creek and south of Lodgepole Creek and the ridge and slopes northwest of Cabin pass.
- RA2 (seasonal access) throughout the remainder of the areas.
- RA3 (unrestricted motorized access) on main forest roads in Lodgepole, Bighorn and Wigwam Creeks.
- RH1 (no landings desired)
- RM2 (limited development) continuation of authorized structures.

LANDSCAPE UNIT C16 – WEST FLATHEAD

Location:

The West Flathead Landscape Unit extends from the international boundary to the height of land north of Shepp Creek and from the Flathead River on the east and along Couldry and Inverted Ridges to Cabin and Harvey Passes on the west. This unit contains approximately 54,000 hectares nearly all of which is Crown land. There are no population centres in the unit or highways through it. An extensive network of roads is spread across the unit and a major forest road follows the Flathead River. Main through routes utilize Cabin and Harvey Creek valleys. The unit is comprised of a major river valley, rugged mountainous terrain, riparian meadows and subalpine lakes.

Recreational Facilities and General Use Patterns:

Of the 23 outdoor recreation activities considered in the RMS, 17 currently occur in this landscape unit. The Ministry of Forests currently manages 5 Recreation Sites in the Flathead valley and 1 site at Frozen Lake. Due to the existence of extensive industrial road systems spread across the unit, far ranging summer and winter motorized activities are the norm for much of the area.. Harvey and Kisoo Pass areas and the alpine basins in the Shepp Creek drainage are favoured locations for winter ski touring and summer hiking/camping activities. Some overlap of incompatible uses currently exists in these areas in the winter as snowmobile use is also a popular activity in these locations. Summer use is less contentious as the Shepp Creek basins are generally not road accessible. The Flathead River is popular for river related recreation activities. This unit contains a high density of roaded areas and due to this the question of social incompatibility is of high import to all users. Many areas are currently available to motorized use but due to both social and environmental concerns regarding potential impacts, there is a critical need to determine

what specific roads should be considered for closure. *This review should be undertaken as part of the Southern Rocky Mountains Management Plan phase II process.*
The unit also has guided hunting and angling operations spread throughout but no tenured commercial recreation operations. Wildlife values are high and centre on the ungulate winter range along the Couldry, Flathead, Harvey and Howell valleys and upland portions of the Harvey Creek valley.

Desired Future Condition:
The West Flathead Landscape Unit will be managed for a wide range of recreational opportunities. As much of the area is currently roaded, there will be significant areas where motorized activities will occur in winter. Ungulate winter ranges will be areas of highest constraint. During the winter most of the area will be available for snowmobiling with a few key locations catering to ski tourers. Locations near Harvey Pass and Shepp Creek will be subject to local agreements that would see them available for snowmobile use after mid March. Summer motorized use will be constrained in some areas. Existing main roads and some minor roads that access areas with high road densities will be available with seasonal restrictions.
As this unit is well removed from communities and highways, any facility development should be transitory in nature. Existing authorized structures are accepted but further infrastructure will be limited to address winter warmup/ emergency use.

RMS Zoning Recommendations:
Summer:

- RA3 (unrestricted motorized access) Flathead R. road, Harvey Cr. road, Cabin Cr. road and Couldrey Cr. road
- RA2 (seasonal access) Howell Cr. access,
- RA2 (seasonal access) in areas of high road densities: Couldrey Creek, north and south of Cabin Creek, Twentynine Mile Creek and upper Howell/Kisoo Pass
- RA1 (non motorized access) all remaining areas.
- RH1 (no landings desired)
- RM1 (no development)

Winter:

- RA3 (unrestricted motorized access) Flathead R. road, Harvey Cr. road, Cabin Cr. road and Couldrey Cr. road
- RA2.2 (snowmobiles after mid March) Shepp Cr. south to Harvey Cr. and Fuel Cr. south to Howell Cr,
- RA1 (non motorized access) all identified ungulate winter range
- RH1 (no landings desired)
- RM2 limited development) existing authorized structures and emergency shelters only

LANDSCAPE UNIT C17 – UPPER FLATHEAD

Location:
The Upper Flathead Landscape Unit extends from the Alberta border to the height of land bounding the upper reaches of the Flathead River on the west and from Flathead Ridge and McLatchie drainage on the south to the height of land at McEvoy Creek and east to the Alberta border. This unit contains 32,190 hectares of which all except approximately 3,000 is Crown land. The main access in the area is the main

forestry Flathead R. road with areas of extensive road networks in McLatchie and Squaw and Pincher Creek drainages. Secondary roads extend into McEvoy Creek as well as into passes in Pollack and Pincher Creeks (North Kootenay Pass). The headwaters of the Flathead River valley are largely unroaded. The unit is comprised of a major river valley with extensive riparian meadow areas, rugged mountainous terrain and alpine ridges.

Recreation Facilities and General Use Patterns:

Of the 23 outdoor recreation opportunities considered in the RMS, 17 presently occur in this unit. There are no developed recreational facilities within the area, however tenured guide-outfitting takes place throughout. Public use is largely local with increasing use by Alberta residents for motorized summer and winter activities. Access through North Kootenay Pass and Pollack Creek is escalating rapidly with pressure of Alberta users. All road systems and a gasline R/W on the western side of the unit receive intensive use both summer and winter. Extensive riparian areas and meadows in the upper end of the valley are features that are desirable but subject to impacts. Wildlife values are high and unmanaged use can impact ungulates in both seasons. The upper reach of the Flathead River is largley unroaded but will be subject to industrial development in the mid term. Users suggest that all new industrial access should be closed to public use when active and closed/rehabilitated upon completion of activities. Current summer use of McEvoy road is causing erosion and other concerns but continues to be a popular route. This unit is one of the most intensively used snowmobile areas with limited non-motorized use.

Desired Future Condition:

The Upper Flathead LU will be managed for a seasonal range of public and commercial uses. In the winter there will be significant areas where motorized activities will occur. Ungulate winter ranges will be areas of highest constraint. Summer use will be primarily non-motorized with access corridors through the unit with portions of the existing road system available with seasonal constraints. Routes through the two passes will be non-motorized summer and winter to encourage access by non locals through existing communities and along existing access routes. As this unit is removed from population centres, the area is not well suited for facility development. Development shall be very limited and low impact in nature.

RMS Zoning recommendations:

Summer:

- RA3 (unrestricted motorized access) on main Flathead Road and McLatchie Creek road.
- RA2 (seasonal access) road to north west of Mt. Corrigan connecting to Squaw Creek., gasline R/W and upper McEvoy Creek and lower Pincher Creek.
- RA1 (non-motorized access) the remainder of the unit.
- RH1 (no landings desired)
- RM1 (no development)

Winter:

- RA3 (unrestricted motorized access) on main Flathead road and McLatchie Creek road.
- RA1 (non-motorized access) on all identified ungulate winter range.
- RA2 (seasonal access) McEvoy road through ungulate winter range and the remainder of the unit.
- RH1 (no landings desired)
- RM2 (limited development) existing authorized structures.

LANDSCAPE UNIT C18 – EAST FLATHEAD

Location:

The East Flathead Landscape Unit encompasses the area east of the Flathead River to the Alberta border from the international boundary north to St Eloi Brook. This area contains approximately 71,000 hectares of Crown land with minor private lands. The major access routes are the main industrial Flathead River road and secondary roads in Kishenina, Sage, Middlepass, Commerce and Cato Creeks. Extensive road networks exist in all the above drainages as well as in the main Flathead R. valley. The unit is comprised of rugged mountainous terrain, mountain passes, a major river valley, riparian meadows, meandering rivers, alpine ridge systems and alpine basins and lakes.

Recreational Facilities and General Use Patterns:

Of the 23 outdoor recreation opportunities considered in the RMS, 17 currently occur in this landscape unit. The Ministry of Forests currently manages 2 Recreation Sites in the lower Flathead valley. Akamina-Kishenina Provincial Park occupies the south-east corner of the unit, encompassing a series of basins and alpine ridges but limited valley bottom terrain. This LU is one of the most remote of all units in the planning area and that character is reflected in its use. Other than existing guide outfitting tenures there are no commercial recreation tenures in this landscape unit. Due to the existence of extensive industrial road networks throughout the unit, summer and winter motorized use generally takes place in the main river valley and the majority of the side drainages along most roads. Winter snowmobile users values the unit as a destination trail riding area with some opportunities for activities in cutblocks. Summer use is associated with access to the Flathhead River, ATV travel throughout the unit and non motorized activities throughout the undeveloped portions of the unit. Some overlap of incompatible uses currently exists in the summer and is focussed on ATV use in many alpine areas. Both summer and winter use by Albertans is increasing due to passes that permit access from the east. This influx of out of province users has raised economic and environmental concerns by many local users. Some sentiment exists for the closure of all passes to direct non -local users through adjacent communities to enhance economic benefits to those communities. Many areas are currently available to motorized use but a critical need exists to determine what specific roads should be considered for restrictions. This unit has wildlife values for Moose habitat, other ungulates, Grizzly bears and other mammals. Current use patterns may be problematic in terms of habitat needs and effects of recreational use on wildlife.

Desired Future Condition:

The East Flathead Landscape Unit will be managed for a range of recreation opportunities with emphasis on retaining the remote character of the area. As much of the area is currently roaded, there will continue to be significant areas where motorized activities in both summer and winter will occur. However, restrictions will be required to protect wildlife and environmental values and motorized activities will be limited to specific access corridors. Passes to Alberta will be available for non motorized use and out of province motorized users will be directed to other access points outside this unit..

As this area will retain its remote character, facility development shall be limited to existing authorized structures. Development of other infrastructure is not recommended.

RMS Zoning Recommendations:

Summer:

- RA3 (unrestricted motorized access) on the main industrial Flathead R. road to 94 km.

- RA2 (seasonal access) on portions (not to passes) of the Proctor, Kishenina, Sage, Commerce, Middlepass and Cato Creek roads.
- RA1 (non motorized access) throughout the remainder of the unit.
- RH1 (no landings desired)
- RM1 (no development)

Winter:

- RA3 (unrestricted motorized access) on the main industrial Flathead R. road to 94 km.
- RA2 (seasonal access) on portions (not to passes) of the Proctor, Kishenina, Sage, Commerce, Middlepass and Cato Creek roads.
- RA1 (non motorized access) throughout the remainder of the unit.
- RH1 (no landings desired)
- RM1 (no development)

LANDSCAPE UNIT 23 – WEST ELK

Location:

The West Elk Landscape Unit extends generally from Sparwood in the south to Elkford in the north. The eastern boundary is the Elk River and the western boundary is the height of land to the west of the Elk River. The size of this unit is 64,371 ha. most of which is crown land. Highway 43 from Sparwood to Elkford runs through the unit (mostly on private land). Major tributaries of the Elk River within this unit include Bingay Creek, Crossing Creek, Boivin Creek, Weigert Creek, Brule Creek and Cummins Creek. The resident population generally resides in the narrow strip of land between the highway and the river and in the communities of Sparwood and Elkford.

Recreation Facilities and General Use Patterns:

Of the 23 backcountry outdoor recreation activities considered in the Recreation Management Strategy (RMS), 20 presently occur in the West Elk landscape unit with only cat skiing, motorized boating and commercial river rafting not present. Present use is primarily local and the dead end nature of highway 43 restricts tourist development potential somewhat. Tenured commercial recreation includes angling, guide outfitting and one licensed snowmobiling operation but it is suspected that other untenured commercial recreation businesses also use this area. Vehicle restrictions are in place either under the Wildlife Act (Access Management Areas) or the Forest Practices Code in Bingay Creek, Weigert Creek and Brule Creek. In addition the community of Elkford supports vehicle restrictions in Boivin Creek.

Desired Future Condition:

The West Elk Unit will be managed for a variety of public and commercial recreation opportunities. Efforts will be made to balance and integrate where possible the types of opportunities to offer "something for everyone". On crown land, in the summer, motorized recreation will be focused in Weigert, Cummins and lower Brule Creeks and in Crossing Creek which links through to the Bull River valley. Non motorized recreation will be concentrated in upper Brule Creek and where compatible with community watershed objectives, in Boivin Creek. In the winter motorized use will be most popular in the Crossing Creek area, including off road areas, in Weigert Creek, and Cummins Creek valley except on identified ungulate winter range. Non motorized use will be concentrated in the Brule Creek valley and Hornaday Pass area with some use where compatible with community watershed objectives, in Boivin Creek. Both public and commercial recreation will be mostly day use with accommodation and services offered in the local communities.

RMS Zoning Recommendations:
Summer:
- RA3 (unrestricted motorized) on highway 43, up Weigert Creek and up Crossing Creek
- RA2 (seasonal motorized) up Cummins Creek and lower Brule Creek
- RA1 (non motorized) throughout the rest of the area
- RH1 (no landings desired)
- RM2 (limited development) in specific areas for existing legal structures
- RM1 (no development) for the rest of the area

Winter:
- RA3 (unrestricted motorized) on highway 43, up Weigert Creek and up Crossing Creek
- RA2.1 (snowmobiles only) in the entire Bingay and Weigert valleys as per the AMAs.
- RA1 (non motorized) in the Boivin and Brule valleys and on identified ungulate winter range
- RA2 (seasonal motorized) on the rest of the area

LANDSCAPE UNIT 24 – LOWER ELK

Location:
The Lower Elk Landscape Unit extends from Elko in the south to Sparwood in the north with the Elk River running through the length of the unit and the east and west heights of land forming the other borders. The total area of this unit is 70,573 ha. Approximately 75% of this unit is private land. Highway 3 runs through the unit near the Elk River. Fernie, Hosmer, Sparwood and Natal are the population centres within this unit.

Recreation Facilities and General Use Patterns:
Of the 23 backcountry outdoor recreation activities considered in the Recreation Management Strategy (RMS), 21 presently occur in the Lower Elk area. There is no licensed guide outfitter operating within this unit and motor boating being the only common recreational activity that doesn't presently occur. Most of the developed recreational facilities between Cranbrook and the Alberta border are concentrated in this area including Mount Fernie ski resort, a commercial cat skiing operation, commercial snowmobiling, commercial river rafting, commercial fish guiding, and guide outfitting. Most motorized and non motorized recreational activities are popular in season with late spring being the only period when backcountry recreation use is diminished. The percentage of locals who recreate in the area is rated as high to very high. Use has increased significantly in recent years primarily from near market tourists. Unorganized recreational uses have the potential to impact the environment, primarily on wintering ungulates, grizzly bears and domestic watersheds. In addition non compatible recreational activities are increasingly in competition in specific areas but there does not seem to be a significant concern with recreational crowding (social capacity impact) except in very specific popular areas at the present time.

Desired Future Condition:
The Lower Elk area will be managed for a wide range of public and commercial recreation opportunities. Efforts will be made to balance and integrate where possible the types of recreation to offer variety. In keeping with the more urban nature of this unit the less primitive; more developed facilities will be common. Development pressures will be greatest near the highway corridor, near existing settlements and

in the most attractive remote "niche" sites. Due to the proximity of the main highway 3 corridor and the areas attractiveness, tourism is expected to increase. As well, the local population centres are expected to grow with many people choosing to move to the area for a lifestyle which includes a quality environment and readily accessible backcountry recreation opportunities. Maintaining a high quality environment and experience will require ongoing planning and community involvement. Local communities have expressed a desire to further develop the economic potential of backcountry recreation by catering to locals and promoting town based accommodation and services for tourists. Wilderness lodges should not dominate or exclude existing recreation use and will be less common than town based tourist facilities.

RMS Zoning Recommendations:

Summer:

- RA3 (unrestricted motorized access) on the highway, Hartley Creek, McCool Creek and Lladnar Creek
- RA2 (seasonal motorized access) on crown land below the powerline on the west side of the valley parallel to the highway and the top end of Lladnar Creek
- RA1 on the rest of the unit
- RH2 (specified landing sites)
- RM3 (high development and use)

Winter:

- RA3 (unrestricted motorized access) on the highway, Hartley Creek, McCool Creek and Lladnar Creek
- RA2.2 (snowmobiles allowed after mid March) Fairy Creek to Hartley Creek and in the Lizard Range.
- RA1 (non motorized access) on identified ungulate winter range
- RA2 (seasonal motorized access) on the rest of the unit

LANDSCAPE UNIT C25 – SAND CREEK

Location:

The Sand Creek Landscape Unit extends from Elko in the southeast to the Bull River in the west and generally comprises the visible southwest facing slopes above the northern portion of the Koocanusa reservoir on the Kootenay River. Highway 3 runs between this landscape unit and the reservoir. This area is approximately 19,000 ha., nearly all of which is Crown Land. There are no population centres within this area or highways through the area. There are relatively few roads within the area. Forestry roads extend up Little Sand Creek through to Sand Creek and its tributaries McDermid Creek, Whimster Creek and Caithness Creek.

Recreation Facilities and General Use Patterns:

Of the 23 backcountry outdoor recreation activities considered in the Recreation Management Strategy (RMS), 20 presently occur in this landscape unit with only the water based activities being absent. Though admittedly use in many types of activities is light. There are few developed recreational facilities in the area. Commercial recreation is limited to untenured snowmobiling, guide outfitting and one cat ski operation. Public recreational use is near year round with peaks in the fall for hunting and in the winter for snowmobiling and ski touring. Public use is primarily local with the exception of hunting which draws hunters from more distant centres mostly within BC. Wildlife values are very high and unmanaged recreation use can have an impact primarily on ungulates during the winter. There is some competition amongst non compatible recreational activities but local agreements seem to be resolving most of the potential conflicts. Over use is not considered to be a major problem at the present time.

Desired future Condition:

The Sand Creek Landscape Unit will be managed for a wide range of public and commercial recreation opportunities. As much of the area is presently not roaded, there will be significant areas where non motorized activities will occur in the summer. Existing roads will generally be open for motorized activities including a loop road between Sand Creek and Little Sand Creek. During the winter most of the area will be available for snowmobiling with a few key sites catering to ski touring enthusiasts. As this landscape unit is removed from population centres and the highway, the area will not be the most desirable for facility development except in "niche" sites. Except for hunting which will continue to be a more attractive draw, public recreation will mostly be from nearby communities. The area is locally known for high value ski touring with one existing commercial cat ski operation and informal heli access ski touring. Commercial recreation will generally be based in the nearby communities. Accommodation and services will be in these towns with day trips into this area for a variety of recreational experiences. Ongoing planning and management of recreational use with strong, local involvement will minimize environmental and social conflicts in the area

RMS Zoning Recommendations:

Summer:

- RA2 (seasonal motorized access) on the forestry roads up Sand Creek, Little Sand Creek, McDermid Creek , Whimster Creek and Caithness Creek.
- RA2 (seasonal motorized access) in the Caithness valley and in the area below Sand Creek and Little Sand Creek.
- RA1 (non motorized access) throughout the rest of the area RH2 (specified landing sites).
- RM2 (limited development).

Winter:

- RA2.2 (snowmobiles allowed after mid March) on areas of local agreement between snowmobiling and ski touring groups in the heights of land south of Sand Creek, south of McDermid Creek and south of Lizard Creek
- RA1 (non motorized access) on identified ungulate winter range
- RA2 (seasonal motorized access) throughout the rest
- RH2 (specified landing sites)
- RM2 (limited development)

LANDSCAPE UNIT C26 – IRON – SULPHUR

Location:

The Iron-Sulphur Landscape Unit extends north up the Bull River to Sulphur Creek, east up Sulphur Creek to Hartley Pass, south along the height of land to Mount Fernie and southwest along the height of land to the Bull River. This area is approximately 39,000 ha., nearly all of which is Crown Land. There are no population centres within this area or highways through the area. There are relatively few roads within the area. A mainline forestry road extends up The Bull River with side roads up Iron Creek and Sulphur Creek.

Recreation Facilities and General Use Patterns:

Of the 23 backcountry outdoor recreation activities considered in the Recreation Management Strategy (RMS), 21 presently occur in this landscape unit with only downhill skiing and motor boating being absent, though admittedly use in many types of activities is light. There are few no developed recreational facilities in the area. Commercial recreation is limited to tenured snowmobiling and guide outfitting. Public recreational use is near year round with peaks in the fall for hunting and in the winter for snowmobiling and ski touring. Public use is primarily local with the exception of hunting which draws hunters from more distant centres mostly within BC. Wildlife values are very hign and unmanaged recreation use can have an impact primarily on ungulates during the winter. There is some competition amongst non compatible recreational activities but local agreements seem to be resolving most of the potential conflicts south of Hartley Pass. Over use is not considered to be a major problem at the present time.

Desired future Condition:

The Iron-Sulphur Landscape Unit will be managed for a wide range of public and commercial recreation opportunities. As much of the area is presently not roaded, there will be significant areas where non motorized activities will occur in the summer. Existing roads will generally be open for motorized activities including a road up Sulphur Creek which connects through Hartley Pass to the Elk River near Fernie. During the winter most of the area will be available for snowmobiling with a few key sites catering to ski touring enthusiasts. The Hartley Pass area is popular for snowmobiling. As this landscape unit is removed from population centres and the highway, the area is not well suited for facility development. Except for hunting which will continue to be a more attractive draw, public recreation will mostly be from nearby communities. The lower elevations of this unit are very important for ungulate winter range which will place some restrictions on recreation use. Ongoing planning and management of recreational use with strong, local involvement will minimize environmental and social conflicts in the area

RMS Zoning Recommendations:

Summer:

- RA3 (unrestricted motorized access) on the Bull River road and Sulphur Creek road
- RA2 (seasonal motorized access) on the Iron Creek road
- RA2 (seasonal motorized access) in the Hartley Pass area
- RA1 (non motorized access) throughout the rest of the area
- RH2 (specified landing sites) in the ridge area in the eastern portion of the unit
- RH1 (no landings desired) in most of the area
- RM2 (limited development) in defined areas below 5000 ft
- RM1 (no development) in the remainder of the area

Winter:

- RA3 (unrestricted motorized access) on the Bull River road and the Sulphur Creek road
- RA2.2 (snowmobiles allowed after mid March) on areas of local agreement between snowmobiling and ski touring groups in the heights of land south of Hartley Pass
- RA1 (non motorized access) on identified ungulate winter range
- RA2 (seasonal motorized access) throughout the rest of the unit.
- RH1 (no landings desired)

- RM2 (limited development) in defined areas below 5000 ft.
- RM1 (no development) throughout the rest of the area

LANDSCAPE UNIT C27 – UPPER BULL

Location:

The Upper Bull Landscape Unit extends from the confluence of Sulphur Creek north to the headwaters of the Bull River and includes all the side drainages, the main tributary to the upper Bull River being Quinn Creek (aka. Queen Creek). This unit is approximately 62,388 ha. There are no permanent residents within this unit. A main Forestry road runs parallel to the river with secondary roads up Quinn Creek and five smaller creeks. The area is remote and largely unroaded.

Recreation Facilities and General Use Patterns:

Of the 23 backcountry outdoor recreation activities considered in the Recreation Management Strategy (RMS), 19 presently occur in this landscape unit with boating and mechanized skiing being absent. There are no developed recreation facilities except for the guide outfitters camps. There is one tenured commercial snowmobile operation and probably several other untenured commercial recreation that use the area. Public recreation is primarily local, relatively light and dispersed with the exception of hunting which has a wider appeal and provincial significance. Parts of this unit are very important for ungulate winter range which will place some restrictions on recreation use. Ongoing planning and management of recreational use with strong, local involvement will minimize environmental and social conflicts in the area.

Desired Future Condition:

The Upper Bull River will be managed for a wide range of public and commercial opportunities. As much of the area is presently not roaded, there will be significant areas where non motorized activities will occur in the summer. Existing roads will generally be open for motorized activities including a road up an unnamed creek in the north which links to Crossing Creek and the Elk River valley. Almost the entire unit will be available for snowmobiling except identified ungulate winter ranges and Norboe Creek which is unroaded and a popular area for hiking and ski touring through Hornaday Pass. Over use is not considered to be a problem at the present time.

RMS Zoning Recommendations:

Summer:

- RA3 (unrestricted motorized access) on the main road up the Bull River and the road east to Crossing Creek.
- RA2 (seasonal motorized access) on Quinn Creek and four other western side valleys
- RA1 (non motorized access) on the rest of the unit
- RH1 (no landings desired)
- RM1 (no development) in the Norboe valley
- RM2 (limited development) in the rest of the unit

Winter:

- RA3 (unrestricted motorized access) on the main road up the Bull River and the road east to Crossing Creek.
- RA2 (seasonal motorized access) over most of the unit

- RA1 (non motorized access) on identified ungulate winter range and in the Norboe valley
- RH1 (no landings desired)
- RM2 (limited development) below 5000 feet
- RM1(no development) above 5000 feet and in the Norboe valley

4.0 A Summary of Key Global Issues:

Global issues is the term we used for concerns that we were unable to address at our stakeholder table and generally fall into four categories:

1. not specific enough to the area being discussed
2. policy direction required
3. beyond the jurisdiction of party involved
4. future or ongoing actions required

Although the following Global Issues are largely beyond the scope of this project, the stakeholder table considered the issues constraints to the effectiveness of any recreation planning process.

1. **Enforcement:**
   Probably the most universal concern from the table affecting the success of the plan. Inadequate enforcement, which extends from informing users by handing out maps through to ticketing offenders, was considered to be the most significant constraint to effective plan implementation.

2. **Untenured Commercial Recreation Businesses and Recreation Cabins:**
   Untenured businesses and the lack of commitment by government to bring them in line was identified as a significant issue. Untenured operators have been freely advertising and operating wherever they choose unencumbered by license fees, management plans, quotas and designated operating areas. The current situation was seen to be detrimental to public enjoyment, the environment and business interests.

3. **Legislative Tools:**
   At this point it is unclear under which legislation these plans will be implemented. Previously three different government Acts were used to manage access: Ministry of Forests (section 105 of the Forest Practices Code), Ministry of Environment (Wildlife Act) and Lands Act. There is a need for increased clarity and consistency in how access is regulated especially in light of the change in ministries and their mandates

4. **Plan updates:**
   The plan must remain current to be effective. A strong commitment is needed to develop and maintain the appropriate body and process to monitor, amend and update the plan on a regular basis.

5. **Angling Guides:**
   The method of issuing these licences was identified as a major cause of concern. Since the licences are not area specific, some areas may receive more pressure because they are more productive and more easily accessed. Quality of experience and management of the resource may be compromised by the "first come; first served" attitude. There are over 150 licensed guides regularly using the Elk River; the allocation and management of angling guide licences in BC. should be addressed.

5.0 List of Participants

Aurora Training Consultants Cokato Association
Corbin Snowmobile/ATV
Corbin Wilderness Group
Corbin Wildlife Society
District of Elkford
District of Sparwood
E. Kootenay Residents Land Use Coalition
East Kootenay Snowmobile Tours
East Kootenay Wildlife Assoc. (EKWA)
East Kootenay Sled Tours
East Kootenay Environmental Society
Southern Rockies Cross Country Ski Club
Elk Valley ATV Club
Elk Valley Bighorn Outfitters

Elk Valley Coalition
Elk Valley Mountaineers
Elk Valley Trappers Association
Elkford Chamber of Commerce
Elkford Nordic Ski Club
Elkford Recreation Development Society
Elkford Rod & Gun Club
Elkford Snowmobile Club
Elkview Coal
Elk Valley Ski Touring Association
Fernie Mountain Bikes

Fernie Chapter, EDO
Fernie Mountain Bike Club
Fernie Rod & Gun Club
Fernie Snowmobile Association
Fernie Cave Hunters
Galloway Lumber
Geology Consulting
Hornaday Wilderness Society
Island Lake Lodge
Kootenay Backcountry Horsemen
Kootenay Angling Guide Association
Kootenay Livestock Association
Line Creek Mining Ltd.
Lost Creek Angling
Ministry of Forests
Mountain Meadow Ranch
South Rockies Cross Country Ski Club
Southern Guides & Outfitters Association
Sparwood Fish & Wildlife Assoc.
Sparwood Snowmobile Club
Tembec Industries Ltd.
Trails BC - Rocky Mtn Region
Waldo Stock Breeders
Windwalker Safari Canada

SOUTHERN ROCKY MOUNTAIN MANAGEMENT PLAN

APPENDIX 18.0

LANDSCAPE UNIT SUMMARY OF ISSUES

Southern Rocky Mountain Management Plan
Landscape Unit Summary June 18, 2002

LU #	**Drainage** (if applicable)	**Topic**	**Key resource values**	**Management direction** (existing or recommended)	**Reference (Source)** *(Document, date, section and/or pages)*
C13/ C34	T555/T560 T490 Galton PAS Unit 40	1993 Best PAS Areas	PAS Value: The Galton Range is an enhancement to the Wigwam River (Unit 18) that connects to winter ranges in the Rocky Mountain Trench. This unit also possesses high cultural values. Diversity: Connects Wigwam River to Sheep Mountain/Wigwam Flats winter ranges, and over the Galton Range via Donald, Raymond, Maguire and Scherf Creeks to the Rocky Mountain Trench. Provides important summer and intermediate range for Rocky Mountain Trench. Provides important summer and intermediate range for bighorn sheep and mule deer. Viability: Area is 9815.0 ha. This unit is only viable as an addition to the Wigwam River Unit 18. Naturalness in 1993: Less than 25% disturbed	1993 recommended Priority Two area for protection.	Best P.A.S. Report. Identification, Evaluation and Ranking of Areas within the Kootenay Region that meet the Protected Areas Strategy Goals and Criteria. Prepared by Conservation, Recreation and Cultural Heritage Subgroups of the Kootenay Regional Protected Areas Team (RPAT). November, 1993. Unit 40.
C13/ C34	T555/T560 & T490	Agriculture	Grazing: Noxious weeds	Need to be addressed	Commercial Hunting and Fishing Focus Group session. March 27, 2002
C13	RMZ C-I04	Agriculture	Grazing	Maintain foraging opportunities for wildlife by allocating no domestic livestock tenures in the unit.	KBLUP IS: Appendix 3, Page 22
C34	RMZ C-I05	Agriculture	Grazing	Maintain opportunities for increased or improved agricultural activity particularly within the Jaffray Polygon.	KBLUP-IS: Appendix 3, Page 24
C13/ C34	T555/T560 & T490 CORE polygon 1-1	Agriculture	Grazing	Polygon Notes: -Grazing is acceptable only in existing units. -Potential for increased agricultural activity. Intent is to pursue the possibility (CORE, East Kootenay Regional Table, Volume 3, Part B Management Guidelines, Agriculture Notes, AG2). Ecosystems Sector concerned that any expansion of crop production or grazing may result in negative impacts on carnivores and ungulates.	CORE 1994 East Kootenay Land Use Plan, Polygon 1-1 Record of Information, and T1+T2 Guidelines.

LU #	Drainage (if applicable)	Topic	Key resource values	Management direction (existing or recommended)	Reference (Source) *(Document, date, section and/or pages)*
				T1 Guideline-Grazing tenures	
C13	C13, C14, C15	Agriculture	Low range values. Range agreement: One grazing permit for guide outfitter horses overlaps with LU C14 + C15. Total 51 AUMs attributable to LU C13, C14, C15. Most of AUMs used in LU C14. Very high ungulate values.		Cranbrook Forest District Recreation Access Plan. March, 2000. LU C13.
C13	T555 + T560 are in the Wigwam Range Unit	Agriculture	Wigwam Range Agreement Holders: GT: Rocky Mtn Lodge- 173 AUMs GT: Steve Leuenberger- 90 AUMs	GT indicates that the Range Agreement Area matches the G/O territory. Wigwam Range Unit covers LU C14, part of C15, part of C24 and the northern tip of C13 (T555 and T560).	Cranbrook Forest District Range Unit Map and Range Agreement Holder information (refer to Range tab in black binder)
C34	T490 is in the Waldo Range Unit	Agriculture	Waldo Range Agreement Holders: Jack Cutts- 792 AUMs	Jack Cutts Ranch is owned by Nature Trust of B.C. and managed by Wildlife branch.	Cranbrook Forest District Range Unit Map and Range Agreement Holder information (refer to Range tab in black binder)
C34	T490 Sheep Mountain WMA	Agriculture	Reduce agriculture/wildlife conflict	By establishing a secure environment for wildlife with the preferred habitat mix of forage and cover to encourage reduced overwintering ungulate use of private ranches and farms.	Sheep Mountain WMA Management Plan: page 15
C34	T490 Sheep Mountain WMA	Agriculture	There are no privately owned agricultural operations within the proposed WMA area. The physical constraints of agricultural soil capability and lack of water prohibit the establishment of any intensive agricultural operation. No demand is anticipated.	Note: Jack Cutts Ranch was acquired for wildlife management purposes by the Nature Trust of B.C. in 1985. Nature Trust leases the 364 ha parcel to Wildlife Branch for intensive wildlife habitat management. Jack Cutts has a life tenancy on the home and surrounding 5 acres, and continues cattle ranching.	Sheep Mountain WMA Management Plan: page 8, 16, 18
C34	T490 Sheep Mountain WMA	Agriculture	Crown grazing to a level of 250 AUMs (currently associated with Cutts Ranch) will be continued in accordance with the Management Plan; however consistent with government policy a guarantee of annual forage availability is not forthcoming. In cooperation with the user BCE would determine livestock numbers and time of use.	Grazing permit would be administered via the Range Act. No long term "new opportunities" will be available on the area, but shorter term (i.e. 3-5 years) opportunities will be available over time as implementation of the management plan progresses. Permitted grazing will be subject to annual rotations, degree and patterns of use and availability of water and forage.	Sheep Mountain WMA Management Plan: page 17
C34	T490 Sheep Mountain	Agriculture-Water	Except for the Elk River which is deeply incised on the border of the proposed WMA, no permanent water bodies exist. Pumping from the Elk River	Scarcity and distribution dictates that any periodic availability of water must be diligently conserved. Maintenance and management of the one licensed spring will be continued to facilitate livestock	Sheep Mountain WMA Management Plan: page 9, 16

LU #	Drainage (if applicable)	Topic	Key resource values	Management direction (existing or recommended)	Reference (Source) *(Document, date, section and/or pages)*
	WMA		requires an immediate vertical lift in excess of 145 m, which is not economically feasible One small developed and operated spring on Wildlife Branch property (65 ha purchased for wildlife management purposes in 1962). Spring is licensed to WLAP, and is maintained and operated for livestock watering. Domestic water is currently trucked in	distribution. If any new sources of water are discovered they will be protected and/or developed to improve livestock distribution and range rotations.	
C13/ C34	T555/T560 T490 CORE polygon 1-1	Agriculture	Livestock grazing	Non-Motorized Sector Comments: concerned with regard to the expansion of cattle grazing in this unit; however whole heartedly supports coordinated resource management plans and the work of the East Kootenay Trench Agriculture/ Wildlife Committee.	CORE 1994 East Kootenay Land Use Plan, Polygon 1-1 Record of Information
C13	T555/T560 RMZ CI04	Access Management	Maintain the existing access management program in the Wigwam Flats-Mount Broadwood area.		KBLUP IS: Appendix 3, Page 22
C34	RMZ C-I05	Access Management	Ensure the range of objectives and strategies are integrated throughout the unit.	All proposals for new road development or expansion will be evaluated through an enhanced referral process or special measures if development is imminent.	KBLUP-IS: Appendix 3, Page 24
C34	T490 Sheep Mountain Wildlife Management Area	Access Management	High capability habitat particularly important for overwintering ungulates.	Currently a legislated access management plan in place over the proposed WMA. This plan restricts the use of motorized vehicles to designated roads. It's purpose is to prevent habitat degradation and the spread of noxious weeds and to eliminate harassment and stress to wildlife during the critical winter period. Ample parking opportunities are available.	Sheep Mountain WMA Management Plan: page 15.
C13	T555/T560 RMZ CI04	Recreation	Maintain a range of recreation opportunities from roaded resource land to semi-primitive non-motorized		KBLUP IS: Appendix 3, Page 22
C34	RMZ C-I05	Recreation	Maintain a range of recreation opportunities from natural to semi primitive non motorized	No new permanent road access within 500m of the river. Temporary roads are to be deactivated on conclusion of resource development.	KBLUP-IS: Appendix 3, Page 24
C34	T490 Sheep Mountain Wildlife	Recreation	Sheep Mountain is used intensively by the recreating public for big game hunting, wildlife viewing, and as an access for angling on the Elk River	Recreational activities such as hunting, wildlife viewing, hiking, nature study, cross country skiing, and access for fishing on the Elk River will continue. Commercial infrastructure for recreational activities will not be permitted.	Sheep Mountain WMA Management Plan: page 6, 15

Southern Rocky Mountain Management Plan
Landscape Unit Summary June 18, 2002

LU #	**Drainage** (if applicable)	**Topic**	**Key resource values**	**Management direction** (existing or recommended)	**Reference (Source)** *(Document, date, section and/or pages)*
	Management Area				
C13/ C34	T555/T560 T490 CORE polygon 1-1	Recreation-Commercial Tourism	2 outfitter areas and base lodges	Polygon Notes-low to moderate commercial tourism is acceptable. T1 Guideline: -maintain traditional use access; -consultation and consensus on access issues (mining referrals would not normally be routed through tourism unless there was a substantial wilderness impact); -consultation on potential alternatives through resource extraction.	CORE 1994 East Kootenay Land Use Plan, Polygon 1-1 Record of Information + T1 Guideline.
C13/ C34	T555/T560 T490	Recreation-Front Country Visuals	T555/T560 & T490 are in Class 1 Scenic Corridor	Located at the boundary of Class 1 & 2 Scenic Corridors.	KBLUP IS: Chapter 3.8, Pages 52-54
C13/ C34	T555/T560 T490	Recreation-Backcountry Recreation	Backcountry River Corridor	Backcountry recreation as per ROS	KBLUP IS Chapter 3.9, Page 54-57
C13/ C34	T555/T560 T490 CORE polygon 1-1	Recreation-Visuals		T1 Guideline: -Smoke management guidelines -Visual Quality Objectives guidelines (implying restrictions on timber volume)	CORE 1994 East Kootenay Land Use Plan, Polygon 1-1 Record of Information + T1 Guideline.
C13/ C34	T555/T560 T490 CORE polygon 1-1	Recreation-Tourism Visuals	High value near Elko mill	T1 Guideline: -Management of high tourism value viewscapes for some enhanced analysis and landscape design (implying no change in timber volume).	CORE 1994 East Kootenay Land Use Plan, Polygon 1-1 Record of Information + T1 Guideline.
C13/ C34	T555/T560 T490 CORE polygon 1-1	Recreation-Sense of Solitude	Sense of solitude	T1 Guideline: -Local agreement preferred -Full range of mechanized and non-mechanized access/activities can be allowed.	CORE 1994 East Kootenay Land Use Plan, Polygon 1-1 Record of Information + T1 Guideline.
C13/ C34	T555/T560 T490 Galton PAS Unit 40	Cultural Heritage	Important traditional use area for the Ktunaxa. No recorded information, but high probability of archaeological evidence, especially at the south end.		Best P.A.S. Report. Identification, Evaluation and Ranking of Areas within the Kootenay Region that meet the Protected Areas Strategy Goals and Criteria. Prepared by Conservation, Recreation and Cultural Heritage Subgroups of the Kootenay Regional Protected

LU #	**Drainage** (if applicable)	**Topic**	**Key resource values**	**Management direction** (existing or recommended)	**Reference (Source)** *(Document, date, section and/or pages)*
					Areas Team (RPAT). November, 1993. Unit 40.
C13/ C34	T555/T560 T490 CORE polygon 1-1	Heritage + Culture	First nations traditional use area especially for fishing, hunting. High heritage values near Elko mill (polygon notes)	T2 Guideline: **Planning:** Public notification and/or review required within development planning process. In the case of highly sensitive or valued sites, extensive public review likely. Mitigation of impacts, protection of resources, and/or recovery of cultural heritage resource before development, may be required. **Access:** Based on local agreements. Guidelines regarding modes/routes of access and levels of use may be required in case of highly sensitive or valued sites. Fencing may be required. Directional signage may be restricted or not allowed. Some buffering from access routes to minimize vandalism. Sensitive sites to be well buffered. Roads to avoid contextual areas. **Facilities:** Restrictions on construction of facilities within contextual areas. In sensitive areas, no development permitted. Temporary site protection may be required. Preservation and reuse of related heritage sites may be permitted under controlled conditions. **Activities** High control level on use of fire and chemicals to protect cultural heritage sites. Activities and party size may be restricted. Establishment of a cultural heritage impact assessment process, including recognized cultural heritage advisors. Development plans to be referred to Community Heritage Commission (or equivalent).	CORE 1994 East Kootenay Land Use Plan, Polygon 1-1 Record of Information + T2 Guideline.
C13	T555	Watershed	Class 2 Domestic Watershed		KBLUP IS: Chapter 3.7 Pages 30-52
C34	RMZ C-I05 T385, T410, T415, T405, T450, T445, T455,T442, T490, T475	Watershed	Class 1 Domestic Watershed		KBLUP-IS: Chapter 3.7, pages 30-52

LU #	Drainage (if applicable)	Topic	Key resource values	Management direction (existing or recommended)	Reference (Source) *(Document date, section and/or pages)*
C34	T490 Sheep Mountain WMA	Water	Except for the Elk River which is deeply incised on the border of the proposed WMA, no permanent water bodies exist. Pumping from the Elk River requires an immediate vertical lift in excess of 145 m, which is not economically feasible. Domestic water is currently trucked in.	Scarcity and distribution dictates that any periodic availability of water must be diligently conserved. Maintenance and management of the one licensed spring will be continued to facilitate livestock distribution. If any new sources of water are discovered they will be protected and/or developed to improve livestock distribution and range rotations. Due to instability most of the banks of the Elk River will be managed by a "leave alone" policy.	Sheep Mountain WMA Management Plan: page 16.
C13/ C34	T555/T560 T490	Biodiversity – Rare and Endangered Species	Prairie Falcon- Red listed (threatened or endangered) Habitat: breed in steep escarpments and rocky cliffs associated with large, dry grasslands or sagebrush steppes Possible breeding distribution: Columbia and Kootenay river valleys.		Listed Vertebrate and Vascular Plant Species Occurring in the Cranbrook Forest District and in the Southern Rocky Mountain Management Plan Area. March, 2002. Page 6.
C13/ C34	T555/T560 T490	Biodiversity – Rare and Endangered Species	Sharp-tailed Grouse- Blue listed (vulnerable) Habitat: ground nesters found in open lowlands with grasslands and shrub-steppes vegetation types. Seek cover in adjacent riparian and deciduous woodlands during winter. Possible breeding distribution: Columbia and Kootenay river valleys.		Listed Vertebrate and Vascular Plant Species Occurring in the Cranbrook Forest District and in the Southern Rocky Mountain Management Plan Area. March, 2002. Page 6.
C13/ C34	T555/T560 T490	Biodiversity – Rare and Endangered Species	Fisher - Blue listed (vulnerable) Habitat: dense, late seral coniferous or mixed wood Distribution: may currently occupy the southeast corner of B.C. in low densities, and at high elevation. Historical range includes the west and southeast portions of the Cranbrook Forest District.		Listed Vertebrate and Vascular Plant Species Occurring in the Cranbrook Forest District and in the Southern Rocky Mountain Management Plan Area. March, 2002. Page 11.
C13/ C34	T555/T560 T490	Biodiversity – Rare and Endangered Species	Badger (Taxidea taxus) - Red listed (threatened or endangered) Habitat: non-forest and open Douglas-fir. Distribution: occur in the southern half of the Cranbrook Forest District, in the Kootenay River Drainage and in the Elk Valley.		Listed Vertebrate and Vascular Plant Species Occurring in the Cranbrook Forest District and in the Southern Rocky Mountain Management Plan Area. March, 2002. Page 12.
C13/	T555/T560	Biodiversity –	Pinewood Peavine- Red listed (threatened or		Listed Vertebrate and Vascular

LU #	Drainage (if applicable)	Topic	Key resource values	Management direction (existing or recommended)	Reference (Source) *(Document, date, section and/or pages)*
C34	T490	Rare and Endangered Species	endangered) Habitat: dry sites in steppe vegetation and lower montane zone Distribution: Rare in S.E. B.C. known only from Elko.		Plant Species Occurring in the Cranbrook Forest District and in the Southern Rocky Mountain Management Plan Area. March, 2002. Page 18.
C13/ C34	T555/T560 T490	Biodiversity	Wigwam Flats/Sheep Mountain provide critical winter wildlife habitat.	Fire maintained ecosystem management should be continued.	Commercial Hunting and Fishing, and Recreational Hunting and Fishing Focus Group sessions. March 27, 2002.
C13	T555/T560 C-I04	Biodiversity	1. Retain forest and rangeland ecological elements and processes, including species richness, distribution and diversity at moderate risk. 2. Retain attributes for old growth dependent species. 3. Ensure habitat requirements for red and blue listed species are achieved.	1.1 Priorities for implementation of Fire Maintained Ecosystem Guidelines (Chapter 3.10) exist in Wigwam Flats. 1.2 Maintain existing access management program in the Wigwam Flats-Mount Broadwood area. 3.1 **Tailed Frog should be designated as an identified wildlife species under the FPC.**	KBLUP IS: Appendix 3, Page 22
C34	RMZ C-I05	Biodiversity	1. Retain grassland and forest ecological elements and processes 2. Maintain regional connectivity corridor for the north-south connection within the East Kootenay Trench, and east-west between SRMZ units C-S06 and C-S07 3. Ensure that habitat requirements for red and blue listed species and regionally significant species are achieved	1.1 Maintain existing access management program on Sheep Mountain. Initiate access management and road/trail deactivation and rehabilitation in accordance with the access management guidelines (Chapter 3, section 3.12). 1.2 New or existing CTP's to concentrate intensive management in the most suitable sites within the permit area. 1.3 Complete the third year of the Enhancement Area Identification Project funded by the CBFWCP 2.1 Apply the connectivity guidelines as per Ch 3.3 2.2 Human settlement plans, including OCP should address regional connectivity 3.1 Address Sharp-Tailed Grouse, Coeur d'Alene Salamander, chipmunks, pocket gophers, bats and turtles	KBLUP-IS: Appendix 3, Page 25
C13/ C34	T555/T560 T490	Biodiversity	Part of the Border Ranges Ecosection (mountainous terrain)	T1 Guideline: - Interior Fish-Forestry Guidelines / Riparian and Streamside	CORE 1994 East Kootenay Land Use Plan, Polygon 1-1 Record of

LU #	Drainage (if applicable)	Topic	Key resource values	Management direction (existing or recommended)	Reference (Source) *(Document, date, section and/or pages)*
	CORE polygon 1-1		Extremely high wildlife and biodiversity values with site specific habitat management prescriptions and guidelines (ie T2) to be developed and implemented at subregional and local level as per Policy 6 (special emphasis on Sheep Mtn). This guideline is not limited to 10% of the landbase for Guideline D&H	Management Guidelines / Wildlife Tree Guidelines / Specific plans for red/blue listed species management	Information + T1 Guideline
C13/ C34	T555/T560 T490 CORE polygon 1-1	Biodiversity-Old Growth	Old growth remnants to provide mature forest cover and habitat and connectivity for populations from the Wigwam to Mount Broadwood -T2 Guideline Elsewhere in polygon-T1 Guideline	T2 Guideline: -Significant retention of old growth across the landscape -FENs with major old growth component; corridors and riparian dominantly old growth, wide corridors. T1 Guideline -FENs / interior fish-forestry guidelines / wildlife guidelines / regional wildlife habitat guidelines	CORE 1994 East Kootenay Land Use Plan, Polygon 1-1 Record of Information + T1/T2 Guidelines
C13/ C34	T555/T560 T490 CORE polygon 1-1	Biodiversity-Natural Grasslands	Sheep Mtn remnant grasslands. Extremely high wildlife and biodiversity values. Site specific habitat management prescriptions and guidelines (ie T2) to be developed and implemented at subregional and local level as per Policy 6 (special emphasis on Sheep Mtn). This guideline is not limited to 10% of the landbase for Guideline D&H WMA proposed for Sheep Mtn but not agreed to by the table	T2 Guideline: -Riparian protection (eg by range riders, by pre-locating salt and fencing). -Cattle watering controls. -Consumption controls on all grazing species to protect grassland habitats (including sage, aspen, etc). -Range utility and condition monitoring; positive trend toward good/excellent condition required. -Weed control and rehabilitation programs (no exotic seeding on specific grasslands; knapweed control acceptable).	CORE 1994 East Kootenay Land Use Plan, Polygon 1-1 Record of Information + T2 Guideline
C34	RMZ C-105	Biodiversity	Low Biodiversity Emphasis		KBLUP-IS: Chapter 3.2, page 3-6; Appendix 3 - Appendix C
C34	RMZ C-105	Biodiversity	All or a portion of LU is important for regional connectivity		KBLUP-IS: Chapter 3.3, pages 6-8
C34	RMZ C-105	Biodiversity	Fire Maintained Ecosystem Guidelines apply		KBLUP-IS: Chapter 3.10, pages 58-65
C34	T490 Sheep Mountain Wildlife	Wildlife-Vegetation Management	Very high capability wildlife area particularly in terms of over wintering for elk, mule deer, white tailed deer and bighorn sheep.	The management objective for the WMA is to manipulate the various plant communities to at least maintain or preferably to increase the carrying capacity of the forage base. This must be achieved by maintaining or creating the desired mix, size and juxtaposition of	Sheep Mountain WMA Management Plan: page 10

LU #	Drainage (if applicable)	Topic	Key resource values	Management direction (existing or recommended)	Reference (Source) *(Document, date, section and/or pages)*
	Management Area			forage and cover areas. A range of types and age classes of forest cover will be managed to provide the necessary snow relief, thermal and visual cover for the specific wildlife species. Forage enhancement will in most areas be geared to provide preferred natural vegetation for the species present in their respective habitat types and terrain. Target plant species will include saskatoon, red osier dogwood, rose, choke cherry, Oregon grape, kinnikinnick, Douglas-fir, bluebunch wheatgrass, Idaho fescue and some minor seeding of a domestic hard grass species.	
[illegible]	1450 Sheep Mountain Wildlife Management Area	Wildlife - Hunting Regulation	Very high capability wildlife area particularly in terms of over wintering for elk, mule deer, white tailed deer and bighorn sheep.	Wildlife populations will be managed at levels commensurate with habitat carrying capacity. Wildlife populations will continue to be managed by general and/or selective hunting regulations designed to maintain the desired sex ratios and age class structures in wild ungulates and large carnivores (i.e. cougar and black bear). This regime will also optimize recreational hunting opportunities.	Sheep Mountain WMA Management Plan: page 15
[illegible]	1450 Sheep Mountain Wildlife Management Area	Wildlife - Rare and Endangered Species	Yellow Badger Columbian sharptailed grouse Golden eagle Osprey Red tailed hawk	All management activities will be designed to maintain the necessary habitat requirements of rare and endangered species present in the proposed WMA.	Sheep Mountain WMA Management Plan: page 10
[illegible]	1450 Sheep Mountain Wildlife Management Area	Wildlife - Other Species	Species which are important in predator/prey relationships (e.g. Columbia ground squirrel) or otherwise contributing to biodiversity and wildlife viewing opportunities will be managed and/or protected.	All management activities will be designed to maintain the necessary habitat requirements of desirable species present in the proposed WMA.	Sheep Mountain WMA Management Plan: page 10
[illegible]	1450 Sheep Mountain Wildlife Management Area	Vegetation	Steep bluffs along the Elk River are critical sheep habitat.	Due to instability most of the banks of the Elk River will be managed by a "leave alone" policy.	Sheep Mountain WMA Management Plan: page 16
[illegible]	[illegible] Elk	Ungulates - Bighorn sheep and	Mt. Broadwood/Wigwam Wildlife Range Complex is critical elk and sheep winter and spring habitat, designated for Intensive Wildlife Management	Wildlife management is recommended as the dominant use. A combination of the following general habitat enhancement activities would be intensively applied to these areas:	Elk-Flathead Operational Wildlife Plan. Prepared Jointly by the Planning and Assessment Branch

LU #	Drainage (if applicable)	Topic	Key resource values	Management direction (existing or recommended)	Reference (Source) *(Document, date, section and/or pages)*
	[illegible]/ Wigwam Wildlife Range Complex	Elk	(Category 1) Biophysical Units: • Class 1 – wildlife winter habitat (elk, sheep, moose, goat, mule deer). • Class 2 – mule deer and sheep winter habitat known / suspected mineral licks This Range Complex is located in LU: C24, C15, C13/34 (Sheep Mtn). 3 known mineral licks occur within C15 and 2 known licks are in close proximity to the boundary between C15 and C13 (refer to Elk-Flathead Operational Wildlife Plan Map and Cross Reference in the LU Summary background information binder)	-Integrated local resource use planning; -Critical habitat identification and protection; -Exploration/mining reclamation; -Impact management activities negotiated under the Mine Development Review Process; -Logging, burning, grazing; -Herbicide, fertilizer treatment; -Slash/brush control, cultivation; -Access planning and management; -Collision mortality management (fencing, underpass, snow clearing); -Winter feeding (restricted)	and Cranbrook Wildlife Branch, MOE. December 1987. Page 13, and Appendix 1, Page 1-2
[illegible]	T555 T560 RMZ C-04	Ungulates	Maintain abundances of elk, mule deer, moose, Rocky Mtn Bighorn, and Rocky Mtn Goats within the sustainable carrying capacity of their habitat.	No domestic livestock tenures are to be allocated in this unit.	KBLUP IS: Appendix 3, page 12
[illegible]	[illegible]	Ungulates	Maintain the abundance of regionally significant elk, moose, mule deer, white-tailed deer and Rocky Mountain Bighorn Sheep.	Complete the Rocky Mountain Trench Elk and Mule Deer Inventory Project to assess the effects of forest in-growth on forage quality and quantity.	KBLUP IS: Appendix 3, Page 26
[illegible]	[illegible]	Ungulates	Ungulate Winter Range (MWE, ESMW)		KBLUP-IS: Chapter 3.5, pages 17-24
[illegible]	[illegible]	Ungulates	Ungulate Winter Range (EMW, EWM, MWE, ESMW SEMW)		KBLUP-IS: Chapter 3.5, pages 17-24.
C13 C24	T555 T560 T490 CORE polygon 1-1	Ungulates	Major ungulate winter range at Wigwam Flats and Flathead Ridge.	T2 Guideline applies to ungulate winter range within T555, T560, T490: -Manage for optimal mix of thermal cover, snow interception and browse production (habitat adjacency key) -Appropriate mix of silvicultural systems and treatments to maintain habitats	CORE 1994 East Kootenay Land Use Plan, Polygon 1-1 Record of Information + T2 Guideline
C13 C24	T555 T560 T490 CORE polygon 1-1	Wide ranging carnivores	Flathead Ridge and denning areas – T2 Guideline	T2 Guideline: -Seasonal feeding and breeding habitats protected. -Conservation of seasonal feeding and breeding areas; silvicultural treatments to favour food production. -Road densities minimal and access management coordinated to	CORE 1994 East Kootenay Land Use Plan, Polygon 1-1 Record of Information + T1/T2 Guidelines.

LU #	Drainage (if applicable)	Topic	Key resource values	Management direction (existing or recommended)	Reference (Source) *(Document date, section and/or pages)*
				avoid conflicts with habitat use -Minimal human habitation and no sanitary landfills -Predator control only under special circumstances -Special grazing management to protect carnivore values T1Guideline: Interior fish-forestry guidelines / FENs / Access control / Landfill regulations / Management of prey species / Maintenance of seasonal feeding and breeding areas / Harvesting regulations	
C34	RMZ C 425	Carnivores	Maintain or enhance existing wolf and cougar populations	Maintain sufficient prey habitat	KBLUP-IS: Appendix 3, Page 26
C13 C34	T555/T560 T490 CORE polygon 1.1	Fisheries	Wigwam is a very important fishery. T2 guidelines apply to all major streams	T2 Guideline -Minimal human-caused sedimentation -Protection of streamside and riparian habitats, no roads in riparian without special permission, however, stream crossing normally acceptable -Management for large organic debris -Watershed sensitivity and ECA analysis prior to development -Protection of spawning and rearing habitat -Reclamation and hydrologic stabilisation where necessary -Assume level one guidelines in place where level two's are applied	CORE 1994 East Kootenay Land Use Plan, Polygon 1-1 Record of Information + T2 Guideline
C13	T555/T560 RMZ C 104	Fisheries	1. Maintain wild stocks and habitat for Bull Trout 2. Maintain wild stocks and habitat for Cutthroat and Bull Trout in the Wigwam River	1.1 Wigwam River is a priority area for WRP assessment/projects 2.1 Explore possible use of access management to limit harvest	KBLUP IS: Appendix 3, page 23
C34	RMZ C 410	Fisheries	Maintain wild fish stocks and habitats for Cutthroat and Bull Trout in the Wigwam River	1. Assess fish populations and habitat 2. Review habitat conservation and current management strategies 3. Explore use of access management to limit harvest	KBLUP-IS: Appendix 3, Page 28
C34	T490 Sheep Mountain Wildlife Management Area	Fisheries	There are no waterbodies on the upland potion of the Sheep Mountain area. The Elk River which borders the area on the east and south sides is a highly important cutthroat trout fishery. It also supports a spawning run of Dolly Varden to the Wigwam River. Since flooding, Kokanee that have proliferated in the Libby Reservoir also use the Elk		Sheep Mountain WMA Management Plan: page 6

LU #	Drainage (if applicable)	Topic	Key resource values	Management direction (existing or recommended)	Reference (Source) *(Document, date, section and/or pages)*
			River		
C34	T400 Sheep Mountain Wildlife Management Area	Forestry	Since proposed WMA has low to very low forest capability forest land and high to very high ungulate winter range, forestry management objectives will be primarily for wildlife enhancement.	Forest management practices will be designed to establish and maintain over time a healthy mosaic of mixed age classes and species mix. The goal is to provide an ongoing regime of thermal cover, visual cover, and snow relief in proportion to population targets, foraging areas and movement corridors. Management techniques will include selective logging, spacing, prescribed burning and periodic Christmas tree harvesting where opportunities and demand arise.	Sheep Mountain WMA Management Plan: page 10
C15 C34	T555/T560 T400 CORE polygon 1-1	Mining	"Lodgepole Creek is required for infrastructure and transportation corridor for coal deposits located within the ____? and the known Sage and Cabin Creek deposits, as well as any undiscovered deposits located in polygon 1-2."	T1 Guideline Mines Act / Health, Safety and Reclamation Code / Mineral Tenure Act / Mine Development Assessment Act / Water Act / Fisheries Act / Forest Act / Guidelines for Mineral Exploration / Guidelines for Coal Exploration / Petroleum and Natural Gas Act / Geothermal Resources Act / other related regulations and guidelines	CORE 1994 East Kootenay Land Use Plan, Polygon 1-1 Record of Information + T1 Guideline
C15 C34	T555/T560 T400 CORE polygon 1-1	Oil and Gas	High oil and gas potential in polygon 1-1 Wigwam-Lodgepole (LU C15 + PC T555+560)		CORE 1994 East Kootenay Land Use Plan, Polygon 1-1 Record of Information
C15 [illegible]	T555/T560 [illegible] CORE polygon 1-1	Unacceptable Uses	Settlement and General Industrial/Commercial Uses are not acceptable uses		CORE 1994 East Kootenay Land Use Plan, Polygon 1-1 Record of Information
C14	Wigwam PAS Unit 18	1993 Best PAS Areas	Priority ranking: One PAS Value: The Wigwam River is a core area which supports productive riparian habitat, old growth, alpine grassland and a regionally significant fishery Diversity: Provides extensive riparian habitat including old growth. Supports grizzly bear, bighorn sheep, elk and moose populations; internationally significant for wolf populations. Area is significant in the ecosection as a bull trout spawning stream for the Libby Reservoir (Lake Koocanusa) and for resident and migratory cutthroat trout	1993 recommended Priority One area for protection.	Best P.A.S. Report: Identification, Evaluation and Ranking of Areas within the Kootenay Region that meet the Protected Areas Strategy Goals and Criteria. Prepared by Conservation, Recreation and Cultureal Heritage Subgroups of the Kootenay Regional Protected Areas Team (RPAT). November 1993. Unit 18

LU #	Drainage (if applicable)	Topic	Key resource values	Management direction (existing or recommended)	Reference (Source) *(Document, date, section and/or pages)*
			Viability: This unit is large enough (29,280.0 ha), and encompasses sufficient of the watershed to be viable. Naturalness in 1993: Less than 25% disturbed. The area is largely natural except for the one road accessing the main Wigwam River valley.		
C14	CORE polygon 1-5, 1-12	Protected area proposal	Core area: riparian; OG; alpine grassland; regionally significant fishery; grizzly bear; bighorn sheep; elk; moose; internationally significant wolf population; important first nations traditional use; less than 25% disturbed; connects with Montana's Ten Lakes Wilderness Study Area (CORE Polygon 1-5b, 1-12b Priority 1 Protected Area. Global/Ecosystem Sectors Comments located in black binder under CORE tab).	Proposal result: Not designated Protected, rather Special Management where intent is to conserve special values identified, while allowing compatible human use and development, including extractive industrial activity, at a high quality management level. Resource development is subject to specific management regulations, guidelines and mitigation (CORE Designations).	CORE 1994 East Kootenay Land Use Plan, Polygon 1-5, 1-12 Sector Comments with Records of Information.
C14	RMZ C-S06	Agriculture	Grazing	Maintain foraging opportunities for wildlife with no domestic livestock tenures allocated within the unit.	KBLUP IS: Appendix 3, Page 12
C14	CORE polygon 1-5, 1-12	Agriculture	Grazing	T1 Guideline: Grazing tenures	CORE 1994 East Kootenay Land Use Plan. Polygon 1-5a + 1-12a Records of Information, and T1 Guideline.
C14	C13, C14, C15	Agriculture	Low range values. Range agreement: One grazing permit for guide outfitter horses overlaps with LU C14 + C15. Total 51 AUMs attributable to LU C13, C14, C15. Most of AUMs used in LU C14. Very high ungulate values.		Cranbrook Forest District Recreation Access Plan (DRAP), March, 2000. LU C14
C14	Wigwam Range Unit	Agriculture	Wigwam Range Agreement Holders: GT: Rocky Mountain Lodge (1978) Ltd - 173 AUMs GT: Steve Leuenberger - 90 AUMs	GT indicates that the Range Agreement Area matches the G/O territory. Wigwam Range Unit covers LU C14, C15, part of C24 and the northern tip of C13 (i.e. T555 and T560)	Cranbrook Forest District Range Unit Map and Range Agreement Holder information (refer to Range tab in black binder)
C14	Wigwam	Access Management	Generally the less roads, the better, especially off main trunk roads.	Roads should be as small as possible and deactivated following use.	Commercial Hunting & Fishing Focus Group session, March 27, 2002

LU #	Drainage (if applicable)	Topic	Key resource values	Management direction (existing or recommended)	Reference (Source) *(Document, date, section and/or pages)*
C14	RM2 C-506	Access Manage-ment	Integrate range of objectives and strategies as related to proposed development access	All proposals for new road development or expansion will be evaluated through an enhanced referral process (see Access Mgmt Guidelines- Section 3.12), or special measures if development is imminent	KBLUP IS App 3, P 11
C14	RM2 C 506	Recreation	Maintain a range of recreation opportunities toward the semi-primitive end of the ROS	1. Roaded areas to be managed for semi-primitive motorized recreation. Road deactivation, rehabilitation and access restrictions after development. 2. Manage the Wigwam River as a Backcountry River Corridor (see Backcountry Recreation Guidelines, Section 3.9). Apply for non-motorized use restriction through Transport Canada 3. No permanent road access within 500m of the Wigwam River unless it is less environmentally damaging to construct the road within this 500m C447 zone 4. Once new roads that are constructed for resource development within 500m of the Wigwam River are no longer necessary for ongoing resource management, they should be deactivated.	KBLUP IS App 3, P 11
C14		Recreation	Backcountry Recreation Management as per the ROS system		KBLUP IS Chapter 3.9, pages 54-57
C14	CORE polygon 1-5, 1-12	Recreation-Commercial Tourism	Outfitter base camp in area	T1 Guideline: -maintain traditional use access; -consultation and consensus on access issues (mining referrals would not normally be routed through tourism unless there was a substantial wilderness impact); -consultation on potential alternatives through resource extraction	CORE 1994 East Kootenay Land Use Plan, Polygon 1-5a +1-12a Records of Information + T1 Guideline
C14	CORE polygon 1-5, 1-12	Recreation-Visuals		T1 Guideline: -Smoke management guidelines -Visual Quality Objectives guidelines (implying restrictions on timber volume)	CORE 1994 East Kootenay Land Use Plan, Polygon 1-5+ 1-12 Record of Information + T1 Guideline
C14	CORE polygon 1-5, 1-12	Recreation-Tourism Visuals		T1 Guideline: -Management of high tourism value viewscapes for some enhanced analysis and landscape design (implying no change in timber volume)	CORE 1994 East Kootenay Land Use Plan, Polygon 1-5+ 1-12 Record of Information + T1 Guideline
C14	CORE	Recreation-	Sense of solitude	T2 Guideline:	CORE 1994 East Kootenay Land

LU #	Drainage (if applicable)	Topic	Key resource values	Management direction (existing or recommended)	Reference (Source) *(Document, date, section and/or pages)*
	polygon 1.5, 1.12	Sense of Solitude		-Local agreement preferred. -Sensitivity to Solitude experiences. -Enhanced management related to timing, seasonality, mode and distribution of mechanized access/activities, recognize existing and potential future use for tenure holders and consider mechanized recreational users.	Use Plan, Polygon 1-5+ 1-12 Record of Information + T2 Guideline.
C14	Wigwam	Heritage	Important traditional use area for Ktunaxa First Nations.		Commercial Hunting & Fishing Focus Group session, March 27, 2002.
C14	Wigwam	Cultural Heritage	Important traditional use area for the Ktunaxa. No recorded information, but high probability of archaeological evidence, especially at the south end.		Best P.A.S. Report. Identification, Evaluation and Ranking of Areas within the Kootenay Region that meet the Protected Areas Strategy Goals and Criteria. Prepared by Conservation, Recreation and Cultureal Heritage Subgroups of the Kootenay Regional Protected Areas Team (RPAT). November, 1993. Unit 18.
C14	CORE polygon 1.5, 1.12	Heritage + Culture	Important traditional use area for Ktunaxa First Nations.	12 Guideline: **Planning:** Public notification and/or review required within development planning process. In the case of highly sensitive or valued sites, extensive public review likely. Mitigation of impacts, protection of resources, and/or recovery of cultural heritage resource before development, may be required. **Access:** Based on local agreements. Guidelines regarding modes/routes of access and levels of use may be required in case of highly sensitive or valued sites. Fencing may be required. Directional signage may be restricted or not allowed. Some buffering from access routes to minimize vandalism. Sensitive sites to be well buffered. Roads to avoid contextual areas. **Facilities:** Restrictions on construction of facilities within contextual areas. In sensitive areas, no development permitted. Temporary site	CORE 1994 East Kootenay Land Use Plan, Polygon 1-12 Record of Information + T2 Guideline.

LU #	**Drainage** (if applicable)	**Topic**	**Key resource values**	**Management direction** (existing or recommended)	**Reference (Source)** *(Document, date, section and/or pages)*
				protection may be required. Preservation and reuse of related heritage sites may be permitted under controlled conditions. **Activities** High control level on use of fire and chemicals to protect cultural heritage sites. Activities and party size may be restricted. Establishment of a cultural heritage impact assessment process, including recognized cultural heritage advisors. Development plans to be referred to Community Heritage Commission (or equivalent).	
C14		Biodiversity – Rare and Endangered Species	Williamson's Sapsucker- Red listed (threatened or endangered) Habitat: Western Larch, Douglas-fir, Ponderosa Pine forests. Nests built in cavities excavated in large (>30cm dbh) live or dead coniferous trees. Distribution: only in southern Interior B.C.. The sub-species nataliae is very rare, but was sighted in the Flathead area.		Listed Vertebrate and Vascular Plant Species Occurring in the Cranbrook Forest District and in the Southern Rocky Mountain Management Plan Area. March, 2002. Page 9.
C14		Biodiversity – Rare and Endangered Species	Fisher - Blue listed (vulnerable) Habitat: dense, late seral coniferous or mixed wood Distribution: may currently occupy the southeast corner of B.C. in low densities, and at high elevation. Historical range includes the west and southeast portions of the Cranbrook Forest District		Listed Vertebrate and Vascular Plant Species Occurring in the Cranbrook Forest District and in the Southern Rocky Mountain Management Plan Area. March, 2002. Page 11.
C14		Biodiversity – Rare and Endangered Species	Badger (Taxidea taxus) - Red listed (threatened or endangered) Habitat: non-forest and open Douglas-fir. Distribution: occur in the southern half of the Cranbrook Forest District, in the Kootenay River Drainage and in the Elk Valley.		Listed Vertebrate and Vascular Plant Species Occurring in the Cranbrook Forest District and in the Southern Rocky Mountain Management Plan Area. March, 2002. Page 12.
C14	RMZ C 506	Biodiversity-General	Maintain regional connectivity between the Flathead drainage and the **Ten Lakes Wilderness Area** in the USA, north to Wigwam Flats and the Mt Broadwood winter range to contribute to ecosystem representation (BRR-Msdk, Essfdk) and to serve as habitat linkage for the seasonal migration of grizzly and black bears, wolves and ungulates.	Apply the connectivity guidelinges within the regional connectivity corridor as indicated in KBLUP IS, Section 3.3	KBLUP IS. App 3, P 11

LU #	Drainage (if applicable)	Topic	Key resource values	Management direction (existing or recommended)	Reference (Source) *(Document, date, section and/or pages)*
C14	CORE polygon 1-5, 1-12	Biodiversity- General	Part of the Border Ranges Ecosection. Unroaded portion of the Wigwam drainage. Area burned in the 1930's, many areas have not recovered. Some remnant old growth in high basins. Generally west side has steep valleys; east side has low mountains and ridges. There is an important riparian zone along the Wigwam River. Very important fishery and wildlife area.	T2 Guideline -Enhanced FENs; riparian protection; wide corridors; significant OG protection. -Landscape habitat mosaic is diverse in stand, age classes, types, structures and composition. -Rare and unique habitats and species protected. -Providing habitat for regional inter-protected area linkage corridors and buffers is a part of management objectives for area. -Minimize expansion of settlement or industrial/commercial use. -Restoration/rehabilitation of disturbed sites	CORE 1994 East Kootenay Land Use Plan, Polygon 1-5 + 1-12 Record of Information + T2 Guideline.
C14		Biodiversity Emphasis	High Biodiversity Emphasis	FPC Biodiversity Guidebook Guidelines	KBLUP IS: Chapter 3.2, page 3-6; Appendix 3 - Appendix C
C14		Biodiversity- Connectivity	All or a portion of LU is important for regional connectivity	FPC Biodiversity Guidebook Guidelines, FPC Identified Wildlife Guidebook	KBLUP IS: Chapter 3.3, pages 6-8
C14	CORE polygon 1-5, 1-12	Biodiversity – Natural Grasslands	Natural Grasslands	T2 Guideline: -Riparian protection (eg by range riders, by pre-locating salt and fencing). -Cattle watering controls. -Consumption controls on all grazing species to protect grassland habitats (including sage, aspen, etc). -Range utility and condition monitoring; positive trend toward good/excellent condition required. -Weed control and rehabilitation programs (no exotic seeding on specific grasslands; knapweed control acceptable)	CORE 1994 East Kootenay Land Use Plan, Polygon 1-5 + 1-12 Record of Information + T2 Guideline.
C14		Ungulates	Maintain grazing opportunities for wildlife.	1. through fire maintained ecosystem burning. Note Galton sheep corridors are growing in. 2. by removing livestock.	Commercial Hunting & Fishing Focus Group session, March 27, 2002
C14	Upper Wigwam Wildlife Range Complex	Ungulates – Elk	Upper Wigwam Wildlife Range Complex is elk winter and spring habitat designated for Active Wildlife Management (Category 2). Biophysical Units: • Class 2 – elk, moose, goat winter winter habitat. • Class 3 – all ungulate species winter habitat. • Class 3 – all ungulate species summer range	Wildlife management would be given equal consideration in specific areas. A combination of the following general management and enhancement techniques would be actively pursued in an interated resource management strategy: -Logging which could benefit/complement wildlife. -Integated silvicultural practices; -Exploration/mining reclamation;	Elk-Flathead Operational Wildlife Plan. Prepared Jointly by the Planning and Assessment Branch and Cranbrook Wildlife Branch, MOE. December, 1987. Page 13, and Appendix 1, Page 1-3.

LU #	Drainage (if applicable)	Topic	Key resource values	Management direction (existing or recommended)	Reference (Source) *(Document, date, section and/or pages)*
			This Range Complex is located in LU C15 and C14 (refer to Elk-Flathead Operational Wildlife Plan Map and Cross Reference in the LU Summary background information binder).	-Access planning. -Impact management activities negotiated through the Mine Development Review Process.	
C14	RMZ C-S06	Ungulates	Maintain abundances of elk, mule deer, white tailed deer, moose, Rocky Mtn Bighorn, and Rocky Mtn Goats within the sustainable carrying capacity of their habitat.	1. Ensure seasonal foraging opportunities through application of the biodiversity emphasis under the FPC. 2. No domestic livestock tenures are to be allocated in this unit.	KBLUP IS: App 3, P 12
C14		Ungulates	Ungulate Winter Range (E, XE)		KBLUP IS: Chapter 3.5, pages 17-24
C14	CORE polygon 1-5, 1-12	Ungulates	Ungulate Winter Range	T2 Guideline: -Manage for optimal mix of thermal cover, snow interception and browse production (habitat adjacency key). -Appropriate mix of silvicultural systems and treatments to maintain habitats.	CORE 1994 East Kootenay Land Use Plan, Polygon 1-5 + 1-12 Record of Information + T2 Guideline.
C 14	RMZ C-S06	Wide ranging carnivores	1. Maintain sufficient seasonal habitat to retain grizzly bear populations. 2. Ensure existing wolf and cougar populations are maintained or enhanced.	1.1 Initiate an inventory project to identry critical habitat, foraging areas and denning sites. 1.2 Complete the Wigwam River/Lodgepole Creek/Leach Creek complex Grizzly Bear Inventory Project. 2.1 Maintain sufficient prey habitat.	KBLUP IS: App 3, P 12
C14		Wide ranging carnivores	Riparian areas along the Wigwam River are critical Grizzly Bear habitat in spring.	No road construction should be permitted in the Wigwam riparian areas.	Commercial Hunting & Fishing Focus Group session, March 27, 2002
C14		Wide ranging carnivores	Priority 2 Grizzly Bear Habitat		KBLUP IS: Chapter 3.4, pages 8-17
C14		Wide ranging carnivores	Value: security Watersheds adjacent to the Flathead provide important habitat and security for carnivores that enhance the value of the Flathead (p. 39) Carnivore conservation principle (2): provide security from excessive mortality with networks of core reserves and other precautionary measures.	• Provide a network of seasonal or permanent security zones throughout the transboundary Flathead basin and elsewhere in the new 'Southern Rocky Mountain Conservation Area'. Consideration of focal species' key habitats will be used to guide the strategic identification and delineation of security zones.	J.Weaver, The Transboundary Flathead, British Columbia and Montana: A Critical Landscape for Carnivores in the Rocky Mountains. 2001, p45

LU #	Drainage (if applicable)	Topic	Key resource values	Management direction (existing or recommended)	Reference (Source) *(Document, date, section and/or pages)*
C14	CORE polygon 1-5, 1-12	Wide ranging carnivores	Wigwam west side (polygon 1-12), T1 Guideline applies. Wigwam east side (polygon 1-5), T2 Guideline applies.	T1 Guideline: Interior fish-forestry guidelines / FENs / Access control / Landfill regulations / Management of prey species / Maintenance of seasonal feeding and breeding areas / Harvesting regulations T2 Guideline: -Seasonal feeding and breeding habitats protected; -Conservation of seasonal feeding and breeding areas; silvicultural treatments to favour food production; -Road densities minimal and access management coordinated to avoid conflicts with habitat use -Minimal human habitation and no sanitary landfills -Predator control only under special circumstances -Special grazing management to protect carnivore values	CORE 1994 East Kootenay Land Use Plan, Polygon 1-5 + 1-12 Record of Information + T1/T2 Guidelines
C14	Wigwam	Fisheries	All species	Habitat management strategies should address entire fishery and not just bull trout. Present management may be compromising other species.	Commercial Hunting & Fishing Focus Group session, March 27, 2002.
C14	RMZ C-SD6	Fisheries	Maintain wild fish stocks and habitat for regionally significant Bull Trout as well as Cutthroat Trout.	Wigwam River watershed should be a priority area for WRP assessments / projects. Possible use of access management to limit harvest	KBLUP IS App.3, P 12
C14	CORE polygon 1-5, 1-12	Fisheries	Regionally significant fishery. Riparian area along both sides of Wigwam River should be managed according to T2 guidelines.	T2 Guideline: -Minimal human-caused sedimentation -Protection of streamside and riparian habitats; no roads in riparian without special permission, however, stream crossing normally acceptable. -Management for large organic debris -Watershed sensitivity and ECA analysis prior to development. -Protection of spawning and rearing habitat -Reclamation and hydrologic stabilization where necessary -Assume level one guidelines in place where level two's are applied.	CORE 1994 East Kootenay Land Use Plan, Polygon 1-5 + 1-12 Record of Information + T2 Guideline.
C14	CORE polygon 1-5, 1-12	Mining		T1 Guideline: Mines Act / Health, Safety and Reclamation Code / Mineral Tenure Act / Mine Development Assessment Act / Water Act / Fisheries Act / Forest Act / Guidelines for Mineral Exploration / Guidelines for Coal Exploration / Petroleum and Natural Gas Act / Geothermal	CORE 1994 East Kootenay Land Use Plan, Polygon 1-5 + 1-12 Record of Information + T1 Guideline.

LU #	Drainage (if applicable)	Topic	Key resource values	Management direction (existing or recommended)	Reference (Source) *(Document, date, section and/or pages)*
				Resources Act / other related regulations and guidelines	
E14	CORE polygon 1-5, 1-12	Oil + Gas	High oil and gas potential on Wigwam east side (polygon 1-5)	Logging activity restricted but mineral and oil and gas exploration are acceptable (similar to Height of the Rockies Wilderness Area)	CORE 1994 East Kootenay Land Use Plan, Polygon 1-5 Record of Information
E14	CORE polygon 1-5, 1-12	Acceptable / Unacceptable Uses	-Settlement, and General Industrial/Commercial uses are not acceptable. -Motorized recreation, tourism, timber, energy mineral, oil and gas are subject to site specific restrictions. -Logging activity restricted but mineral and oil and gas exploration are acceptable (similar to Height of the Rockies Wilderness Area)		CORE 1994 East Kootenay Land Use Plan, Polygon 1-5+ 1-12 Record of Information + T2 Guideline
E14-Adjacent	Montana Kootenai National Forest - Ten Lakes Contiguous Area (MA 8)	Agriculture	Area is located on the east side of the Wigwam River along the periphery of the Ten Lakes Montana Wilderness Study Act Area. It is recommended for Congressional Wilderness designation. Goals are to retain the wilderness values, allow natural ecological processes to continue, maintain primitive recreation opportunities, and provide habitat to contribute to the recovery of the grizzly bear	1. There are no existing allotments for grazing domestic livestock and none are permitted. 2. Recreational pack stock grazing is permitted. If popular areas are overused or damaged, pack stock grazing will be discontinued on those sites	Kootenai National Forest Forest Plan–Volume 1. Northern Region Forest Service. U.S. Department of Agriculture. 1987 Management Area 8. Page III-26, 28 Forest wide objectives on Page II-3 to 11 and standards on page II-20 to 33 apply to this MA
E14-Adjacent	Montana Kootenai National Forest - Ten Lakes Contiguous Area (MA 8)	Access	Area is located on the east side of the Wigwam River along the periphery of the Ten Lakes Montana Wilderness Study Act Area. It is recommended for Congressional Wilderness designation. Goals are to retain the wilderness values, allow natural ecological processes to continue, maintain primitive recreation opportunities, and provide habitat to contribute to the recovery of the grizzly bear	1. No road construction is permitted. 2. New trails may be constructed except when in conflict with "grizzly situations 1 or 2" Grizzly management situation 1 is high quality habitat; management situation 2 is movement area between high quality habitat areas (Flathead National Forest Management Plan, Page II-7)	Kootenai National Forest Forest Plan–Volume 1. Northern Region Forest Service. U.S. Department of Agriculture. 1987 Management Area 8. Page III-26, 29. Forest wide objectives on Page II-3 to 11 and standards on page II-20 to 33 apply to this MA
E14-Adjacent	Montana Kootenai National Forest - Ten Lakes	Recreation VQO, ROS and general recreation	Area is located on the east side of the Wigwam River along the periphery of the Ten Lakes Montana Wilderness Study Act Area. It is recommended for Congressional Wilderness designation. Goals are to retain the wilderness values, allow natural	1. VQO preservation. 2. ROS mainly primitive. 3. Roadless non-motorized forms of recreation (horseback riding and hiking) will be accommodated and managed. 4. Over-used sites will be monitored, and if resource damage occurs	Kootenai National Forest Forest Plan–Volume 1. Northern Region Forest Service. U.S. Department of Agriculture. 1987 Management Area 8, Page III-26,

LU #	**Drainage** (if applicable)	**Topic**	**Key resource values**	**Management direction** (existing or recommended)	**Reference (Source)** *(Document, date, section and/or pages)*
	Contiguous Area (MA 8)		ecological processes to continue; maintain primitive recreation opportunities; and provide habitat to contribute to the recovery of the grizzly bear	the sites will be restricted or closed and rehabilitated. 5. Educational signs and brochures will be provided on 'no trace camping' and bear awareness. 6. Permanent facilities for guide outfitters will not be permitted.	27 Forest wide objectives on Page II-3 to 11 and standards on page II-20 to 33 apply to this MA.
C16 Adjacent	Montana Kootenai National Forest Ten Lakes Contiguous Area (MA 8)	Recreation-snowmobile use	Area is located on the east side of the Wigwam River along the periphery of the Ten Lakes Montana Wilderness Study Act Area. It is recommended for Congressional Wilderness designation. Goals are to retain the wilderness values; allow natural ecological processes to continue; maintain primitive recreation opportunities; and provide habitat to contribute to the recovery of the grizzly bear.	Snowmobile use is presently permitted in portions of the Ten Lakes Contiguous Area. That use may continue unless it is determined to conflict with grizzly management or other wildlife standards. It is assumed that snowmobile use will be prohibited on all areas which are designated as Wilderness by Congress. No motorized use is permitted in the remainder of this Management Area.	Kootenai National Forest Forest Plan-Volume 1. Northern Region Forest Service. U.S. Department of Agriculture. 1987. Management Area 8, Page III-27, 28 Forest wide objectives on Page II-3 to 11 and standards on page II-20 to 33 apply to this MA.
C16 Adjacent	Montana Kootenai National Forest Ten Lakes Contiguous Area (MA 8)	Fish and Wildlife	Area is located on the east side of the Wigwam River along the periphery of the Ten Lakes Montana Wilderness Study Act Area. It is recommended for Congressional Wilderness designation. Goals are to retain the wilderness values; allow natural ecological processes to continue; maintain primitive recreation opportunities; and provide habitat to contribute to the recovery of the grizzly bear.	1. Habitat enhancement through burning may occur especially on winter range areas. 2. Areas of mature timber and old growth are considered to be part of the old growth habitat on the Forest. Before using prescribed fire in an old growth area, the amount of old growth will be determined for the major drainage affected, and not allowed to fall below the designated minimum (usually 10%). 3. Stocking of lakes with indigenous fish is permitted except the program may be cancelled for selected lakes if sites adjacent to those lakes become overused. 4. Isolated enclaves of pure strain trout species will be identified and preserved.	Kootenai National Forest Forest Plan-Volume 1. Northern Region Forest Service. U.S. Department of Agriculture. 1987. Management Area 8, Page III-27, 28 Forest wide objectives on Page II-3 to 11 and standards on page II-20 to 33 apply to this MA.
C16 Adjacent	Montana Kootenai National Forest Ten Lakes Recommended Wilderness Area (MA 9)	Agriculture	Area is located on the east side of the Wigwam River and encompasses the Ten Lakes Montana Wilderness Study Act Area and surrounding lands. Only the Wilderness Study Area is recommended for Congressional Wilderness designation, however the entire area of MA9 is managed in accordance with the Montana Wilderness Study Act. The goals are to retain the wilderness values; allow natural ecological processes to continue; maintain primitive recreation opportunities; and provide habitat to contribute to the recovery of the grizzly bear.	1. There are no existing allotments for grazing domestic livestock and none are permitted. 2. Recreational pack stock grazing is permitted. If popular areas are overused or damaged, pack stock grazing will be discontinued on those sites.	Kootenai National Forest Forest Plan-Volume 1. Northern Region Forest Service. U.S. Department of Agriculture. 1987. Management Area 9, Page III-32, 34 Forest wide objectives on Page II-3 to 11 and standards on page II-20 to 33 apply to this MA.

LU #	Drainage (if applicable)	Topic	Key resource values	Management direction (existing or recommended)	Reference (Source) *(Document, date, section and/or pages)*
[illegible]	Montana Kootenai National Forest - Ten Lakes Recommended Wilderness Area (MA 9)	Access	Area is located on the east side of the Wigwam River and encompasses the Ten Lakes Montana Wilderness Study Act Area and surrounding lands. Only the Wilderness Study Area is recommended for Congressional Wilderness designation, however the entire area of MA9 is managed in accordance with the Montana Wilderness Study Act. The goals are to retain the wilderness values, allow natural ecological processes to continue, maintain primitive recreation opportunities, and provide habitat to contribute to the recovery of the grizzly bear.	1. No road construction is permitted. 2. New trails may be constructed except when in conflict with "Grizzly Situations 1 or 2". Grizzly management situation 1 is high quality habitat; management situation 2 is movement area between high quality habitat (Flathead National Forest Management Plan, Page II-7).	Kootenai National Forest Forest Plan-Volume 1. Northern Region Forest Service. U.S. Department of Agriculture. 1987 Management Area 9, Page III-32, 34 Forest wide objectives on Page II-3 to 11 and standards on page II-20 to 33 apply to this MA.
[illegible]	Montana Kootenai National Forest - Ten Lakes Recommended Wilderness Area (MA 9)	Recreation: VQO, ROS and general recreation	Area is located on the east side of the Wigwam River and encompasses the Ten Lakes Montana Wilderness Study Act Area and surrounding lands. Only the Wilderness Study Area is recommended for Congressional Wilderness designation, however the entire area of MA9 is managed in accordance with the Montana Wilderness Study Act. The goals are to retain the wilderness values, allow natural ecological processes to continue, maintain primitive recreation opportunities, and provide habitat to contribute to the recovery of the grizzly bear.	1. VQO preservation. 2. ROS mainly primitive. 3. Roadless non-motorized forms of recreation (horseback riding and hiking) will be accommodated and managed. 4. Over used sites will be monitored, and if resource damage occurs the sites will be restricted or closed and rehabilitated. 5. Educational signs and brochures will be provided on 'no trace camping' and bear awareness. 6. Permanent facilities for guide outfitters will not be permitted.	Kootenai National Forest Forest Plan-Volume 1. Northern Region Forest Service. U.S. Department of Agriculture. 1987 Management Area 9, Page III-32, 33 Forest wide objectives on Page II-3 to 11 and standards on page II-20 to 33 apply to this MA.
[illegible]	Montana Kootenai National Forest - Ten Lakes Recommended Wilderness Area (MA 9)	Recreation-snowmobile use	Area is located on the east side of the Wigwam River and encompasses the Ten Lakes Montana Wilderness Study Act Area and surrounding lands. Only the Wilderness Study Area is recommended for Congressional Wilderness designation, however the entire area of MA9 is managed in accordance with the Montana Wilderness Study Act. The goals are to retain the wilderness values, allow natural ecological processes to continue, maintain primitive recreation opportunities, and provide habitat to contribute to the recovery of the grizzly bear.	Snowmobile use is presently permitted in portions of the Ten Lakes Contiguous Area. That use may continue unless it is determined to conflict with grizzly management or other wildlife standards. It is assumed that snowmobile use will be prohibited on all areas which are designated as Wilderness by Congress. No motorized use is permitted in the remainder of this Management Area.	Kootenai National Forest Forest Plan-Volume 1. Northern Region Forest Service. U.S. Department of Agriculture. 1987 Management Area 9, Page III-32, 33 Forest wide objectives on Page II-3 to 11 and standards on page II-20 to 33 apply to this MA.
[illegible]	Montana Kootenai National	Fish and Wildlife	Area is located on the east side of the Wigwam River and encompasses the Ten Lakes Montana Wilderness Study Act Area and surrounding lands.	1. Habitat enhancement through burning may occur especially on winter range areas. 2. Areas of mature timber and old growth are considered to be part	Kootenai National Forest Forest Plan-Volume 1. Northern Region Forest Service. U.S.

LU #	**Drainage** (if applicable)	**Topic**	**Key resource values**	**Management direction** (existing or recommended)	**Reference (Source)** *(Document, date, section and/or pages)*
	Forest: Ten Lakes Recommended Wilderness Area (MA 9)		Only the Wilderness Study Area is recommended for Congressional Wilderness designation, however the entire area of MA9 is managed in accordance with the Montana Wilderness Study Act. The goals are to retain the wilderness values; allow natural ecological processes to continue; maintain primitive recreation opportunities; and provide habitat to contribute to the recovery of the grizzly bear. Values: High quality winter range for elk and deer. Past caribou sign in the Ten Lakes area indicates a few animals may be present intermittently, however no resident caribou population exists.	of the old growth habitat on the Forest. Before using prescribed fire in an old growth area, the amount of old growth will be determined for the major drainage affected, and not allowed to fall below the designated minimum (usually 10%). 3. Stocking of lakes with indigenous fish is permitted except the program may be cancelled for selected lakes if sites adjacent to those lakes become overused. 4. Isolated enclaves of pure strain trout species will be identified and preserved.	Department of Agriculture. 1987. Management Area 9, Page III-32, 34. Forest wide objectives on Page II-3 to 11 and standards on page II-20 to 33 apply to this MA.
C14-Adjacent	Montana: Kootenai National Forest: Management Area 12 (MA 12)	Agriculture	Area is located east of the Ten Lakes Recommended Wilderness Area and is at elevations generally at or above 4000', and contains inclusions of moist or wet habitat types. Most species of big game use this Management Area from late spring through late fall. The goal is to maintain or enhance non winter big-game habitat and produce a programmed yield of timber. Major species include black bear, grizzly bear, elk, moose, white tailed deer, and mule deer.	1. Grazing of domestic livestock is permitted unless it is detrimental to the big game or timber goals of this Management Area. 2. Fencing may be constructed to control livestock provided there is no conflict with the big game goals of this Management Area.	Kootenai National Forest Forest Plan–Volume 1. Northern Region Forest Service. U.S. Department of Agriculture. 1987. Management Area 12, Page III-48, 49. Forest wide objectives on Page II-3 to 11 and standards on page II-20 to 33 apply to this MA.
C14-Adjacent	Montana: Kootenai National Forest: Management Area 12 (MA 12)	Access	Area is located east of the Ten Lakes Recommended Wilderness Area and is at elevations generally at or above 4000', and contains inclusions of moist or wet habitat types. Most species of big game use this Management Area from late spring through late fall. The goal is to maintain or enhance non- winter big-game habitat and produce a programmed yield of timber. Major species include black bear, grizzly bear, elk, moose, white tailed deer, and mule deer.	1. Road densities will be the minimum necessary to accomplish the timber harvest goals of this Management Area, and construction to minimum standards will be emphasized. 2. Roads open to the public will not exceed an average density of ¾ mile per square mile within the contiguous MA. 3. Local roads will normally be closed. 4. Road locations will avoid key summer range habitat elements (e.g. wallows, wet meadows), unless there is no reasonable alternative. 5. Maintain a buffer of at least one sight-distance around key habitat features. 6. Temporary roads will be closed, drained and revegetated. 7. This MA is classified as a transportation or utility corridor	Kootenai National Forest Forest Plan–Volume 1. Northern Region Forest Service. U.S. Department of Agriculture. 1987. Management Area 12, Page III-48, 51. Forest wide objectives on Page II-3 to 11 and standards on page II-20 to 33 apply to this MA.

LU #	**Drainage** (if applicable)	**Topic**	**Key resource values**	**Management direction** (existing or recommended)	**Reference (Source)** *(Document, date, section and/or pages)*
				avoidance area on grizzly situations 1 and 2. 8. When seeding areas adjacent to open roads in grizzly situation 1 and 2, do not use any component (such as clover) which may attract grizzly bears.	
C14-Adjacent	Montana: Kootenai National Forest: Management Area 12 (MA 12)	Recreation-Off-road vehicle use, VQO, ROS	Area is located east of the Ten Lakes Recommended Wilderness Area and is at elevations generally at or above 4000', and contains inclusions of moist or wet habitat types. Most species of big game use this Management Area from late spring through late fall. The goal is to maintain or enhance non winter big-game habitat and produce a programmed yield of timber. Major species include black bear, grizzly bear, elk, moose, white tailed deer, and mule deer.	1. Off-road vehicle use will be regulated, including permanent or seasonal use restrictions where off-road vehicle use conflicts with big game. 2. VQO is maximum modification in areas of low visual significance, moderate in areas of moderate visual significance and partial retention in areas of high visual significance, unless infeasible when attempting to meet the goals of the MA. 3. ROS is predominantly roaded- natural with some semi- primitive motorized and rural opportunities.	Kootenai National Forest Forest Plan–Volume 1. Northern Region Forest Service. U.S. Department of Agriculture. 1987. Management Area 12, Page III-48 Forest wide objectives on Page II-3 to 11 and standards on page II-20 to 33 apply to this MA.
C14-Adjacent	Montana: Kootenai National Forest: Management Area 12 (MA 12)	Fish and Wildlife	Area is located east of the Ten Lakes Recommended Wilderness Area and is at elevations generally at or above 4000', and contains inclusions of moist or wet habitat types. Most species of big game use this Management Area from late spring through late fall. The goal is to maintain or enhance non winter big-game habitat and produce a programmed yield of timber. Major species include black bear, grizzly bear, elk, moose, white tailed deer, and mule deer.	1. Manage to provide habitat diversity including cover and forage areas in a ratio appropriate for black bear, grizzly bear, elk, moose, white tailed deer, and mule deer. Results of the Montana Elk Logging Study and related guidelines are incorporated in and are considered as additional direction for this MA. 2. Grizzly habitat will be managed according to Grizzly Mgmt Situation Guidelines. 3. Cavity management according to Cavity Habitat Mgmt Guidelines. 4. Provide direct habitat improvement as needed. Projects include pot-hole construction, prescribed fire, hardwood plantings in riparian areas, seeding of road cuts and fills with grasses and legumes. 5. Maximize edge effect within economical timber harvest constraints, by shaping timber harvest units and maintain movement corridors of at least two sight distances between openings. When the edge is maximized, the shape becomes more important than the size of the units, but generally the unit sizes should not exceed: elk and mule deer- 40 acres or less; moose and whitetail deer-20 acres. 6. Key habitat components (wallows, wet meadows, bogs, etc.) will be avoided when constructing roads. As they are identified those key components will be mapped and managed as riparian areas.	Kootenai National Forest Forest Plan–Volume 1. Northern Region Forest Service. U.S. Department of Agriculture. 1987. Management Area 12, Page III-48, 49. Forest wide objectives on Page II-3 to 11 and standards on page II-20 to 33 apply to this MA.

LU #	Drainage (if applicable)	Topic	Key resource values	Management direction (existing or recommended)	Reference (Source) *(Document, date, section and/or pages)*
C14-Adjacent	Montana: Kootenai National Forest: Management Area 12 (MA 12)	Timber	Area is located east of the Ten Lakes Recommended Wilderness Area and is at elevations generally at or above 4000', and contains inclusions of moist or wet habitat types. Most species of big game use this Management Area from late spring through late fall. The goal is to maintain or enhance non winter big-game habitat and produce a programmed yield of timber. Major species include black bear, grizzly bear, elk, moose, white tailed deer, and mule deer.	This MA is suitable for timber production. Timber harvest will be coordinated with big-game requirements. Emphasize natural regeneration and activity scheduling which reduces the frequency of entries. New units will not be harvested until adjacent units provide suitable hiding cover. Favor even-aged harvest systems. Precommercial thinning is expected in this MA outside of Grizzly Situation 1 & 2 lands to meet the programmed timber harvest goals. Precommercial thinning may occur within Grizzly Situation 1&2 where it does not conflict with grizzly management goals. Provide for full stocking levels after timber harvest for diversity, big-game cover needs, and timber production. On slopes over 30% favor broadcast burning over the use of mechanical means of site preparation. Catastrophic events such as fire, windstorm, disease, or insects, especially the periodic infestations of the mountain pine beetle in mature lodgepole pine, may create situations where harvest is desirable. In such cases, a short-term reduction in the VQO is permitted.	Kootenai National Forest Forest Plan–Volume 1. Northern Region Forest Service. U.S. Department of Agriculture. 1987 Management Area 12, Page III-48, 49. Forest wide objectives on Page II-3 to 11 and standards on page II-20 to 33 apply to this MA.
C15	Wigwam PAS Unit 18	1993 Best PAS Areas	PAS Value: The Wigwam River is a core area which supports productive riparian habitat, old growth, alpine grassland and a regionally significant fishery. Diversity: Provides extensive riparian habitat, including old growth. Supports grizzly bear, bighorn sheep, elk and moose populations; internationally significant for wolf populations. Area is significant in the ecosection as a bull trout spawning stream for the Libby Reservoir (Lake Koocanusa) and for resident and migratory cutthroat trout. Viability: This unit is large enough (29,280.0 ha), and encompasses sufficient of the watershed to be viable. Naturalness in 1993: Less than 25% disturbed. The	1993 recommended Priority One area for protection.	Best P.A.S. Report. Identification, Evaluation and Ranking of Areas within the Kootenay Region that meet the Protected Areas Strategy Goals and Criteria. Prepared by Conservation, Recreation and Cultureal Heritage Subgroups of the Kootenay Regional Protected Areas Team (RPAT). November, 1993. Unit 18.

LU #	**Drainage** (if applicable)	**Topic**	**Key resource values**	**Management direction** (existing or recommended)	**Reference (Source)** *(Document, date, section and/or pages)*
			area is largely natural except for the one road accessing the main Wigwam River valley.		
C15	Bighorn PAS Unit 43	1993 Best PAS Areas	PAS Value: This Unit is an enhancement to the Wigwam River Unit 18 and provides regionally significant fisheries habitat. Diversity: Regionally significant as the most important bull trout and cutthroat trout spawning stream for the Libby reservoir. It also supports bighorn sheep, grizzly bear, elk and mule deer. Viability: Sufficient size to be considered viable (17491.0 ha), however the unit is much more viable as an addition to the Wigwam River Unit 18. Naturalness in 1993: Less than 25% disturbed by roads and logging.	1993 recommended Priority Two area for protection.	Best P.A.S. Report. Identification, Evaluation and Ranking of Areas within the Kootenay Region that meet the Protected Areas Strategy Goals and Criteria. Prepared by Conservation, Recreation and Cultureal Heritage Subgroups of the Kootenay Regional Protected Areas Team (RPAT). November, 1993. Unit 43.
C15	RMZ C-I04	Agriculture	Grazing	Maintain foraging opportunities for wildlife with no domestic livestock tenures allocated within the unit.	KBLUP IS: Appendix 3, Page 22
C15		Agriculture	Low range values. Range agreements: Three grazing permits for guide outfitter horses which overlap LU C13, C14, C15. Total 51 AUMs attributable to LU C13-C17 + C24. 80 AUMs attributable to LU C15. 165 AUMs total.		Cranbrook Forest District Recreation Access Plan (DRAP), March, 2000. LU C15.
C15	Wigwam Range Unit	Agriculture	Wigwam Range Agreement Holders: GT: Rocky Mountain Lodge (1978) Ltd - 173 AUMs GT: Steve Leuenberger - 90 AUMs	GT indicates that the Range Agreement Area matches the G/O territory. Wigwam Range Unit covers LU C14, part of C15, part of C24 and the northern tip of C13 (i.e. T555 and T560).	Cranbrook Forest District Range Unit Map and Range Agreement Holder information (refer to Range tab in black binder)
C15	CORE polygon 1-1	Agriculture	Grazing "Crop production on (Crown land) allowed? In 1994, the only ranch belonged to Wildlife Branch"	Polygon Notes *(provide conflicting management direction)*: 1. Potential for increased agricultural activity. Intent is to pursue the possibility (CORE, East Kootenay Regional Table, Volume 3, Part B Management Guidelines, Agriculture Notes, AG2). 2. Grazing is acceptable only in existing units. Ecosystems Sector concerned that any expansion of crop production or grazing may result in negative impacts on carnivores and	CORE 1994 East Kootenay Land Use Plan. Polygon 1-1 Record of Information, and T1 Guidelines.

LU #	**Drainage** (if applicable)	**Topic**	**Key resource values**	**Management direction** (existing or recommended)	**Reference (Source)** *(Document, date, section and/or pages)*
				ungulates. (Refer to Sector Comments with Record of Information). Outdoor Recreation Non-Motorized Sector concerned re: expansion of cattle grazing in this unit, however whole heartedly supports CRMPs and the work of the EK Trench Agriculture/ Wildlife Committee. T1 Guideline-Grazing tenures	
C15		Access Management	Access issues on the Dominion Government Coal Block.	Block should be included in Plan for the purpose of addressing access issues.	Commercial Hunting & Fishing Focus Group session, March 27, 2002.
C15	RMZ C-I04	Access Management		Maintain the existing access management program in the Wigwam Flats - Mount Broadwood area.	KBLUP IS: Appendix 3, Page 22
C15	RMZ C-I04	Recreation	Maintain a range of recreation opportunities from roaded resource land to semi-primitive non-motorized.		KBLUP IS: Appendix 3, Page 22
C15		Recreation	Backcountry recreation management	as per ROS system	KBLUP IS: Ch 3.9, p54-57
C15	CORE polygon 1-1	Recreation-Commercial Tourism	2 outfitter areas and base lodges	Polygon Notes-low to moderate commercial tourism is acceptable. T1 Guideline: -maintain traditional use access; -consultation and consensus on access issues (mining referrals would not normally be routed thru tourism unless there was a substantial wilderness impact); -consultation on potential alternatives through resource extraction.	CORE 1994 East Kootenay Land Use Plan, Polygon 1-1 Record of Information + T1 Guideline.
C15	W050, W055	Recreation-Visuals	Class 1 scenic corridor	1. In most visible foreground and important mid ground, visible disturbance may be discernible but should not be evident. 2. In less prominent foreground, most mid ground and important background, visible disturbance should remain subordinate. 3. In most background areas and less important mid ground areas, landscape alterations may be visually apparent, but should be designed to blend into the landscape in form and colour.	KBLUP IS: Ch 3.8, p 52-54
C15	CORE polygon 1-1	Recreation-Visuals		T1 Guideline: -Smoke management guidelines -Visual Quality Objectives guidelines (implying restrictions on timber	CORE 1994 East Kootenay Land Use Plan, Polygon 1-1 Record of Information + T1 Guideline

LU #	**Drainage** (if applicable)	**Topic**	**Key resource values**	**Management direction** (existing or recommended)	**Reference (Source)** *(Document, date, section and/or pages)*
				volume)	
C15	CORE polygon 1-1	Recreation-Tourism Visuals	High value near Elko mill	T1 Guideline: -Management of high tourism value viewscapes for some enhanced analysis and landscape design (implying no change in timber volume).	CORE 1994 East Kootenay Land Use Plan, Polygon 1-1 Record of Information + T1 Guideline.
C15	CORE polygon 1-1	Recreation-Sense of Solitude	Sense of solitude	T1 Guideline: -Local agreement preferred. -Full range of mechanized and non-mechanized access/activities can be allowed.	CORE 1994 East Kootenay Land Use Plan, Polygon 1-1 Record of Information + T1 Guideline.
C15	Wigwam	Cultural Heritage	Important traditional use area for the Ktunaxa. No recorded information, but high probability of archaeological evidence, especially at the south end.		Best P.A.S. Report. Identification, Evaluation and Ranking of Areas within the Kootenay Region that meet the Protected Areas Strategy Goals and Criteria. Prepared by Conservation, Recreation and Cultureal Heritage Subgroups of the Kootenay Regional Protected Areas Team (RPAT). November, 1993. Unit 18.
C15	CORE polygon 1-1	Heritage + Culture	First nations traditional use area especially for fishing, hunting. High heritage values near Elko mill.	T2 Guideline: **Planning:** Public notification and/or review required within development planning process. In the case of highly sensitive or valued sites, extensive public review likely. Mitigation of impacts, protection of resources, and/or recovery of cultural heritage resource before development, may be required. **Access:** Based on local agreements. Guidelines regarding modes/routes of access and levels of use may be required in case of highly sensitive or valued sites. Fencing may be required. Directional signage may be restricted or not allowed. Some buffering from access routes to minimize vandalism. Sensitive sites to be well buffered. Roads to avoid contextual areas. **Facilities:** Restrictions on construction of facilities within contextual areas. In sensitive areas, no development permitted. Temporary site	CORE 1994 East Kootenay Land Use Plan, Polygon 1-1 Record of Information + T2 Guideline.

LU #	**Drainage** (if applicable)	**Topic**	**Key resource values**	**Management direction** (existing or recommended)	**Reference (Source)** *(Document, date, section and/or pages)*
				protection may be required. Preservation and reuse of related heritage sites may be permitted under controlled conditions. **Activities** High control level on use of fire and chemicals to protect cultural heritage sites. Activities and party size may be restricted. Establishment of a cultural heritage impact assessment process, including recognized cultural heritage advisors. Development plans to be referred to Community Heritage Commission (or equivalent).	
C15		Biodiversity – Rare and Endangered Species	Fisher - Blue listed (vulnerable) Habitat: dense, late seral coniferous or mixed wood Distribution: may currently occupy the southeast corner of B.C. in low densities, and at high elevation Historical range includes the west and southeast portions of the Cranbrook Forest District.		Listed Vertebrate and Vascular Plant Species Occurring in the Cranbrook Forest District and in the Southern Rocky Mountain Management Plan Area. March, 2002. Page 11.
C15		Biodiversity – Rare and Endangered Species	Badger (Taxidea taxus) - Red listed (threatened or endangered) Habitat: non-forest and open Douglas-fir. Distribution: occur in the southern half of the Cranbrook Forest District, in the Kootenay River Drainage and in the Elk Valley.		Listed Vertebrate and Vascular Plant Species Occurring in the Cranbrook Forest District and in the Southern Rocky Mountain Management Plan Area. March, 2002. Page 12.
C15	CORE polygon 1-1	Biodiversity – General	Part of the Border Ranges Ecosection (mountainous terrain). Polygon 1-1 includes roaded portions of Lodgepole and Wigwam drainages.		CORE 1994 East Kootenay Land Use Plan, Polygon 1-1 Record of Information.
C15	RMZ C-I04	Biodiversity - General	1. Retain forest and rangeland ecological elements and processes at a moderate risk. 2. Retain attributes for old growth dependent species and fur-bearers. 3. Ensure habitat requirements for red and blue listed species are achieved.	1. Wigwam Flats are a priority for the implementation of the Fire Maintained Ecosystem Restoration Guidelines (Ch. 3.10). 2. Spruce / Balsam stands in the tributaries of Lodgepole Creek and Ram Creek are a priority for establishing OGMA's. 3. The Tailed Frog should be designated as an identified wildlife species under the FPC. Initiate inventory project.	KBLUP IS: Appendix 3, Page 22
C15		Biodiversity	Biodiversity Emphasis Option	Medium	KBLUP IS: Ch 3.2 p3-6, A3- AC CORE (94) Polygon 1-1 Record
C15	CORE polygon 1-1	Biodiversity General	North-south connectivity from east Wigwam to Mt Bradford	T1 Guideline: Interior Fish-Forestry Guidelines / Riparian and Streamside Management Guidelines / Wildlife Tree Guidelines / Specific plans	CORE 1994 East Kootenay Land Use Plan, Polygon 1-1 Record of Information and T1 Guideline.

LU #	**Drainage** (if applicable)	**Topic**	**Key resource values**	**Management direction** (existing or recommended)	**Reference (Source)** *(Document, date, section and/or pages)*
				for red/blue listed species management	
C15		Biodiversity: Old Growth	Lodgepole Creek/Wigwam River Old Growth	Stands to remain intact until OGMA's for the LU are established. These stands should be a part of the OGMA for the LU.	KBLUP IS: MOU between MOF/MOE re:instructions for preparation of 1998 FDP's, Pg2.
C15	CORE polygon 1-1	Biodiversity: Old Growth	Old growth remnants to provide mature forest cover and habitat and connectivity for populations from the Wigwam to Mt. Broadwood-T2 guideline. Elsewhere T1	T2 Guideline: -Significant retention of old growth across landscape. -FENs with major OG component; corridors and riparian dominantly OG; wide corridors. T1 Guideline: FENs / Interior Fish-Forestry-Wildlife Guidelines / Regional Wildlife Habitat Guidelines.	CORE 1994 East Kootenay Land Use Plan, Polygon 1-1 Record of Information + T1/T2 Guidelines.
C15		Biodiversity: Connectivity	All or portion of LU is important for regional connectivity.	Refer to results of March 12 connectivity workshop (otherwise-KBLUP IS Ch 3.3.2)	KBLUP IS: Ch 3.3, p 6-8
C15	W045, W050,W095	Biodiversity: NDT4	Fire maintained ecosystems	Refer to KBLUP IS management guidelines Ch 3.10.2, p60-64	KBLUP IS: Ch 3.10.2, p58-64
C15	CORE polygon 1-1	Biodiversity-natural grasslands	Sheep Mtn remnant grasslands. Extremely high wildlife and biodiversity values. Site specific habitat management prescriptions and guidelines (ie T2) to be developed and implemented at subregional and local level as per Policy 6 (special emphasis on Sheep Mtn). This guideline is not limited to 10% of the landbase for Guideline D&H. WMA proposed for Sheep Mtn but not agreed to by the table.	T2 Guideline: -Riparian protection (eg by range riders, by pre-locating salt and fencing). -Cattle watering controls. -Consumption controls on all grazing species to protect grassland habitats (including sage, aspen, etc). -Range utility and condition monitoring; positive trend toward good/excellent condition required. -Weed control and rehabilitation programs (no exotic seeding on specific grasslands; knapweed control acceptable).	CORE 1994 East Kootenay Land Use Plan, Polygon 1-1 Record of Information + T2 Guideline.
C15	Mt. Broadwood/ Wigwam Wildlife Range Complex	Ungulates – Bighorn sheep and Elk	Mt. Broadwood/Wigwam Wildlife Range Complex is critical elk and sheep winter and spring habitat, designated for Intensive Wildlife Management (Category 1). Biophysical Units: • Class 1 - wildlife winter habitat (elk, sheep, moose, goat, mule deer) • Class 2 – mule deer and sheep winter habitat known / suspected mineral licks.	Wildlife management is recommended as the dominant use. A combination of the following general habitat enhancement activities would be intensively applied to these areas: -Integrated local resource use planning; -Critical habitat identification and protection; -Exploration/mining reclamation; -Impact management activities negotiated under the Mine Development Review Process; -Logging, burning, grazing; -Herbicide, fertilizer treatment;	Elk-Flathead Operational Wildlife Plan. Prepared Jointly by the Planning and Assessment Branch and Cranbrook Wildlife Branch, MOE. December, 1987. Page 13, and Appendix 1, Page 1-2.

LU #	**Drainage** (if applicable)	**Topic**	**Key resource values**	**Management direction** (existing or recommended)	**Reference (Source)** *(Document, date, section and/or pages)*
			This Range Complex is located in LU: C24, C15, C13/34 (Sheep Mtn); 3 known mineral licks occur within C15 and 2 known licks are in close proximity to the boundary between C15 and C13 (refer to Elk-Flathead Operational Wildlife Plan Map and Cross Reference in the LU Summary background information binder).	-Slash/brush control, cultivation; -Access planning and management; -Collision mortality management (fencing, underpass, snow clearing); -Winter feeding (restricted).	
C15	Upper Wigwam Wildlife Range Complex	Ungulates – Elk	Upper Wigwam Wildlife Range Complex is elk winter and spring habitat designated for Active Wildlife Management (Category 2). Biophysical Units: • Class 2 – elk, moose, goat winter winter habitat • Class 3 – all ungulate species winter habitat • Class 3 – all ungulate species summer range This Range Complex is located in LU C15 and C14 (refer to Elk-Flathead Operational Wildlife Plan Map and Cross Reference in the LU Summary background information binder).	Wildlife management would be given equal consideration in specific areas. A combination of the following general management and enhancement techniques would be actively pursued in an interated resource management strategy: -Logging which could benefit/complement wildlife; -Integated silvicultural practices; -Exploration/mining reclamation; -Access planning; -Impact management activities negotiated through the Mine Development Review Process.	Elk-Flathead Operational Wildlife Plan. Prepared Jointly by the Planning and Assessment Branch and Cranbrook Wildlife Branch, MOE. December, 1987. Page 13, and Appendix 1, Page 1-3.
C15	RMZ C-I04	Ungulates	Maintain abundance of elk, mule deer, Rocky Mountain Goats and Rocky Mountain Bighorn sheep	Maintain foraging opportunities for wildlife. No domestic livestock tenures to be issued within the unit.	KBLUP IS Appendix 3, Page 22
C15		Ungulates	Ungulate winter range (X, ESMW, XE)	Operational guidelines KBLUP IS Ch 3.5.2, p20-24	KBLUP IS Ch 3.5 p17-24
C15	CORE polygon 1-1	Ungulates	Major ungulate winter range at Wigwam Flats and Flathead Ridge	T2 Guideline applies to ungulate winter range are within LU 15: -Manage for optimal mix of thermal cover, snow interception and browse production (habitat adjacency key) -Appropriate mix of silvicultural systems and treatments to maintain habitats	CORE 1994 East Kootenay Land Use Plan, Polygon 1-1 Record of Information + T2 Guideline
C15		Wide ranging carnivores	Priority 2 Grizzly Bear habitat	Operational guidelines KBLUP IS Ch 3.4.2, p10-17	KBLUP IS Ch 3.4 p 8-17
C15	CORE polygon 1-1	Wide ranging carnivores	Flathead Ridge and denning areas – T2	T2 Guideline: -Seasonal feeding and breeding habitats protected -Conservation of seasonal feeding and breeding areas: silvicultural treatments to favour food production; -Road densities minimal and access management coordinated to	CORE 1994 East Kootenay Land Use Plan, Polygon 1-1 Record of Information + T1/T2 Guidelines.

LU #	**Drainage** (if applicable)	**Topic**	**Key resource values**	**Management direction** (existing or recommended)	**Reference (Source)** *(Document, date, section and/or pages)*
				avoid conflicts with habitat use. -Minimal human habitation and no sanitary landfills. -Predator control only under special circumstances. -Special grazing management to protect carnivore values. T1Guideline: Interior fish-forestry guidelines / FENs / Access control / Landfill regulations / Management of prey species / Maintenance of seasonal feeding and breeding areas / Harvesting regulations	
C15	RMZ C-104	Fisheries	1. Maintain wild stocks and habitat for Bull Trout. 2. Maintain wild fish stocks and habitat for Cutthroat and Bull Trout in the Wigwam River	1. River is a priority area for WRP assessments / projects. 2. Explore possible use of access management to limit harvest.	KBLUP IS: Appendix 3, Page 23
C15	CORE polygon 1-1	Fisheries	Wigwam is a very important fishery. T2 guidelines apply to all major streams.	T2 Guideline: -Minimal human-caused sedimentation. -Protection of streamside and riparian habitats; no roads in riparian without special permission, however, stream crossing normally acceptable. -Management for large organic debris. -Watershed sensitivity and ECA analysis prior to development. -Protection of spawning and rearing habitat. -Reclamation and hydrologic stabilization where necessary. -Assume level one guidelines in place where level two's are applied.	CORE 1994 East Kootenay Land Use Plan, Polygon 1-1 Record of Information + T2 Guideline
C15	CORE polygon 1-1	Coal Mining	1. Crowsnest coalfield • Medium and high value coal lands are located northeast of Windfall Mountain in LU C15. • The high value, exposed coal bearing lands of the Crowsnest coalfield include three areas: Fernie block (73,333 ha) (located in LU C17, C19, C24, C38); Corbin area (962 ha) and Tent Mountain area (1,603 ha) (located in C19) (p7). 2. Flathead coalfield • Medium and high value coal lands are located in the area east of Mount Doupe to Cabin Pass in LU C15	Definitions • High value coal lands include the area from the outcrop of the coal bearing strata to its inferred depth limit (p1). • Medium value coal land is a corridor for mining related activities and infrastructure, surrounding the exposed coal bearing strata (high value coal lands) (p1).	Morris, Bob. Resource Estimate East Kootenay Coalfields. 1994 Pages 1, 4, 7; Fig. 5: E.K. Coal Fields Location Map; and Fig. 7: Coal Value Lands Map Refer to Black Binder: Coal tab for maps.

LU #	**Drainage** (if applicable)	**Topic**	**Key resource values**	**Management direction** (existing or recommended)	**Reference (Source)** *(Document, date, section and/or pages)*
			• The high value lands of the Flathead coalfield are four widely dispersed blocks including: Sage Creek area (1,154 ha), Cabin Creek area (577 ha) and Harvey Creek area (962 ha), all located in LU C16. Lillyburt area (1,090 ha), in the vicinity of Flathead townsite, is located in LU C17 (p7).		
C15	CORE polygon 1-1	Mining	Lodgepole Creek is required for infrastructure and transportation corridor for coal deposits located within the ____? and the known Sage and Cabin Creek deposits as well as any undiscovered deposits located in polygon 1-2.	T1 Guideline: Mines Act / Health, Safety and Reclamation Code / Mineral Tenure Act / Mine Development Assessment Act / Water Act / Fisheries Act / Forest Act / Guidelines for Mineral Exploration / Guidelines for Coal Exploration / Petroleum and Natural Gas Act / Geothermal Resources Act / other related regulations and guidelines	CORE 1994 East Kootenay Land Use Plan, Polygon 1-1 Record of Information + T1 Guideline.
C15	CORF polygon 1-1	Oil and Gas	High oil and gas potential in polygon 1-1 Wigwam-Lodgepole		CORE 1994 East Kootenay Land Use Plan, Polygon 1-1 Record of Information.
C15	CORE polygon 1-1	Unacceptable Uses	Settlement and General Industrial/Commercial Uses are not acceptable uses.		CORE 1994 East Kootenay Land Use Plan, Polygon 1-1 Record of Information.
C16	Flathead PAS Unit 26	1993 Best PAS Areas	Area encompasses the drainage of the Flathead River north of the Canada/USA border, excluding the Howell and Cabin Creek drainages. PAS Value: This area is internationally significant for shared bull trout, grizzly bear and wolf populations with Montana. It includes the largest contiguous stand of old growth lodgepole pine and is internationally important as the Canadian extension of the Flathead River (a designated "Wild and Scenic River" in Montana). Diversity: Provides productive riparian areas along the wide floodplain of the Flathead River, including the largest contiguous stands of old growth lodgepole pine. Supports black bear, moose, elk, white tailed deer and cougar in a complex	1993 recommended Priority Two area for protection.	Best P.A.S. Report. Identification, Evaluation and Ranking of Areas within the Kootenay Region that meet the Protected Areas Strategy Goals and Criteria. Prepared by Conservation, Recreation and Cultureal Heritage Subgroups of the Kootenay Regional Protected Areas Team (RPAT). November, 1993. Unit 26

LU #	Drainage (if applicable)	Topic	Key resource values	Management direction (existing or recommended)	Reference (Source) *(Document, date, section and/or pages)*
			predator/prey relationship. Connects to Glacier N.P. Viability: This unit is of sufficient size (56,134 ha), and watershed completeness to be viable, particularly in connection to Glacier National Park. Naturalness in 1993: Less than 25% disturbed by roads, logging and oil and gas development		
C16	RMZ C-S05, C-I04	Agriculture	Grazing	Maintain foraging opportunities for wildlife with no domestic livestock tenures allocated within the unit.	KBLUP IS: Appendix 3, Page 10 and Page 22
C16		Agriculture	Low range values. Range agreements: One grazing permit for guide outfitter horses which overlaps LU C15 for a total of 72 AUMs. 15 AUMs attributable to C16.	No grazing permitted except for guide outfitter horses.	Cranbrook Forest District Recreation Access Plan (DRAP), March, 2000. LU C16.
C16	Flathead Range Unit	Agriculture	Flathead Range Agreement Holders: GT: David Eider - 73 AUMs GT: Harry Leuenberger - 54 AUMs	GT indicates that the Range Agreement Area matches the G/O territory. Flathead Range Unit includes LU C16, C17 and C18.	Cranbrook Forest District Range Unit Map and Range Agreement Holder information (refer to Range tab in black binder)
C16	CORE polygon 1-2, 1-3, 1-11	Agriculture	Grazing	Potential for increased agricultural activity. Intent is to pursue the possibility (CORE, East Kootenay Regional Table, Volume 3, Part B Management Guidelines, Agriculture Notes, AG2). Ecosystems Sector concerned re: grazing because of internationally significant bear and wolf populations. Any expansion may result in negative impacts on carnivores and ungulates. Outdoor Recreation Non-Motorized Sector concerned re: expansion of cattle grazing in this unit, however whole heartedly supports CRMPs and the work of the EK Trench Agriculture/ Wildlife Committee. (Refer to Sector Comments with Record of Information). T1 Guideline-Grazing tenures	CORE 1994 East Kootenay Land Use Plan, Polygon 1-2, 1-3, 1-11 Records of Information.
C16		Access Management	Flathead International border crossing	Border crossing should remain closed.	Commercial Hunting & Fishing, and Forestry Focus Group sessions. March, 2002.
C16	RMZ C-S05	Access	Ensure range of objectives and strategies are	All proposals for new road development or expansions will be	KBLUP IS: Appendix 3, Page 9

LU #	Drainage (if applicable)	Topic	Key resource values	Management direction (existing or recommended)	Reference (Source) *(Document, date, section and/or pages)*
		Management	integrated within the upper Flathead River and McEvoy Creek area, particularly as they relate to access for proposed development.	evaluated through either: • an enhanced referral process as described in the Access Mgmt Guidelines (Ch 3.12), or • special measures which, because of imminent development, require immediate attention.	
C16	RMZ C-S05 & C-I04	Recreation	Maintain range of recreation opportunities from roaded resource land to semi-primitive non-motorized (C-S05 & C-I04).	1. Motorized use restrictions may be required to maintain semi-primitive character (C-S05). 2. Manage the Flathead river as a Backcountry River Corridor consistent with the Backcountry Recreation Guidelines (Table 1.2). Apply for non-motorized use restriction through Transport Canada (C-S05).	KBLUP IS: Appendix 3, Page 9 and Page 22
C16		Recreation	Backcountry recreation as per ROS system		KBLUP IS: Chapter 3.9, Pg 54-57.
C16	CORE polygon 1-2 Flathead-west side	Recreation-Commercial Tourism	Two guide/outfitter areas and base camps. Backcountry horse trails in Upper Howell Ck. High wildlife values.	T1 Guideline: -maintain traditional use access; -consultation and consensus on access issues (mining referrals would not normally be routed through tourism unless there was a substantial wilderness impact); -consultation on potential alternatives through resource extraction.	CORE 1994 East Kootenay Land Use Plan, Polygon 1-2 Record of Information + T1 Guideline.
C16	CORE polygon 1-3 Flathead river corridor	Recreation-Commercial Tourism	-Area is used by two to three guide/outfitters. Very important area for grizzly bear, wolf, white tail deer, moose and elk. Ungulate winter range. -River: supports Bull trout; is used for rafting; and is a 'wild and scenic' river on US side of border, and is the major source of water for Flathead Lake.	T1 Guideline: -maintain traditional use access; -consultation and consensus on access issues (mining referrals would not normally be routed through tourism unless there was a substantial wilderness impact); -consultation on potential alternatives through resource extraction.	CORE 1994 East Kootenay Land Use Plan, Polygon 1-3 Record of Information + T1 Guideline.
C16	CORE polygon 1-11 Harvey Creek	Recreation-Commercial Tourism		T1 Guideline: -maintain traditional use access; -consultation and consensus on access issues (mining referrals would not normally be routed through tourism unless there was a substantial wilderness impact); -consultation on potential alternatives through resource extraction.	CORE 1994 East Kootenay Land Use Plan, Polygon 1-11 Record of Information + T1 Guideline.
C16	CORE polygon 1-2	Recreation	Backcountry ski touring in Upper Lodgepole, McLatchie and Harvey Creeks. TransCanada Trail following Cabin Creek.	T1 Guideline: -maintain traditional use access; -consultation and consensus on access issues (mining referrals	CORE 1994 East Kootenay Land Use Plan, Polygon 1-2 Record of Information + T1 Guideline.

LU #	Drainage (if applicable)	Topic	Key resource values	Management direction (existing or recommended)	Reference (Source) *(Document, date, section and/or pages)*
				would not normally be routed through tourism unless there was a substantial wilderness impact); -consultation on potential alternatives through resource extraction.	
C16	CORE polygon 1-2, 1-3, 1-11	Recreation-Visuals-tourism + general		T1 Guideline: -Management of high tourism value viewscapes for some enhanced analysis and landscape design (implying no change in timber volume) -Smoke management guidelines -Visual Quality Objectives guidelines apply (implying restrictions on timber volume)	CORE 1994 East Kootenay Land Use Plan, Polygon 1-2; 1-3; 1-11 Record of Information + T1 Guideline.
C16	CORE polygon 1-2, 1-3, 1-11	Recreation-Sense of Solitude	Sense of Solitude	T1 Guideline: -Local agreement preferred. -Full range of mechanized and non-mechanized access/activities can be allowed.	CORE 1994 East Kootenay Land Use Plan, Polygon 1-2; 1-3; 1-11 Record of Information + T1 Guideline.
C16	Flathead PAS Unit 26	Cultural Heritage	Regionally representative of oil exploration and international relations themes and contains regionally significant Flathead customs site.		Best P.A.S. Report. Identification, Evaluation and Ranking of Areas within the Kootenay Region that meet the Protected Areas Strategy Goals and Criteria. Prepared by Conservation, Recreation and Cultureal Heritage Subgroups of the Kootenay Regional Protected Areas Team (RPAT). November, 1993. Unit 26.
C16	CORE polygon 1-2, 1-3, 1-11	Cultural Heritage		T2 Guideline: **Planning:** Public notification and/or review required within development planning process. In the case of highly sensitive or valued sites, extensive public review likely. Mitigation of impacts, protection of resources, and/or recovery of cultural heritage resource before development, may be required. **Access:** Based on local agreements. Guidelines regarding modes/routes of access and levels of use may be required in case of highly sensitive or valued sites. Fencing may be required. Directional signage may be restricted or not allowed. Some buffering from access routes to	CORE 1994 East Kootenay Land Use Plan, Polygon 1-2; 1-3; 1-11 Record of Information + T1 Guideline.

LU #	Drainage (if applicable)	Topic	Key resource values	Management direction (existing or recommended)	Reference (Source) *(Document, date, section and/or pages)*
				minimize vandalism. Sensitive sites to be well buffered. Roads to avoid contextual areas. **Facilities:** Restrictions on construction of facilities within contextual areas. In sensitive areas, no development permitted. Temporary site protection may be required. Preservation and reuse of related heritage sites may be permitted under controlled conditions. **Activities** High control level on use of fire and chemicals to protect cultural heritage sites. Activities and party size may be restricted. Establishment of a cultural heritage impact assessment process, including recognized cultural heritage advisors. Development plans to be referred to Community Heritage Commission (or equivalent).	
C16	F105	Watershed	Class 1 Domestic Watershed		KBLUP IS: Ch 3.7, Page 30-52.
C16	Flathead River drainage	Biodiversity – Rare and Endangered Species	Mottled Sculpin – Blue list (vulnerable) Habitat: Wide range of stream sizes with cool clear water. Distribution: Flathead River drainage. It is suggested that the population found in the Flathead River would be the only true population of Mottled Sculpin in B.C.		Listed Vertebrate and Vascular Plant Species Occurring in the Cranbrook Forest District and in the Southern Rocky Mountain Management Plan Area. March, 2002. Page 2.
C16	West Flathead River	Biodiversity – Rare and Endangered Species	Tailed Frog – Red list (threatened or endangered) Habitat: fast, small, permanent forest streams with clear, cold water (ESSF). Distribution: west Flathead River drainage.		Listed Vertebrate and Vascular Plant Species Occurring in the Cranbrook Forest District and in the Southern Rocky Mountain Management Plan Area. March, 2002. Page 3.
C16	Couldrey Creek	Biodiversity- Rare and Endangered Species	Tailed frog habitat at Couldrey Creek	Is in danger and needs to be addressed.	Commercial Hunting & Fishing Focus Group session. March 27, 2002.
C16	South area of LU	Biodiversity – Rare and Endangered Species	Williamson's Sapsucker- Red listed (threatened or endangered) Habitat: Western Larch, Douglas-fir, Ponderosa Pine forests. Nests built in cavities excavated in		Listed Vertebrate and Vascular Plant Species Occurring in the Cranbrook Forest District and in the Southern Rocky Mountain

LU #	Drainage (if applicable)	Topic	Key resource values	Management direction (existing or recommended)	Reference (Source) *(Document, date, section and/or pages)*
			large (>30cm dbh) live or dead coniferous trees. Distribution: only in southern Interior B.C.. The sub-species nataliae is very rare, but was sighted in the Flathead area		Management Plan Area. March, 2002. Page 9.
C16		Biodiversity – Rare and Endangered Species	Southern Red Backed Vole - Blue listed (vulnerable) Habitat: Cool, moist, older forests. Distribution: In B.C. recorded only from the southeast corner of Cranbrook Forest District		Listed Vertebrate and Vascular Plant Species Occurring in the Cranbrook Forest District and in the Southern Rocky Mountain Management Plan Area. March, 2002. Page 11.
C16		Biodiversity – Rare and Endangered Species	Fisher - Blue listed (vulnerable) Habitat: dense, late seral coniferous or mixed wood. Distribution: may currently occupy the southeast corner of B.C. in low densities, and at high elevation. Historical range includes the west and southeast portions of the Cranbrook Forest District.		Listed Vertebrate and Vascular Plant Species Occurring in the Cranbrook Forest District and in the Southern Rocky Mountain Management Plan Area. March, 2002. Page 11.
C16		Biodiversity – Rare and Endangered Species	Badger (Taxidea taxus) - Red listed (threatened or endangered) Habitat: non-forest and open Douglas-fir. Distribution: occur in the southern half of the Cranbrook Forest District, in the Kootenay River Drainage and in the Elk Valley.		Listed Vertebrate and Vascular Plant Species Occurring in the Cranbrook Forest District and in the Southern Rocky Mountain Management Plan Area. March, 2002. Page 12.
C16		Biodiversity – Rare and Endangered Species	Large-flowered Brickellia- Red listed (threatened or endangered) Habitat: Eroded slopes and rocky banks. Montane Distribution: Rare in S.E. B.C.. Known only from Flathead Valley.		Listed Vertebrate and Vascular Plant Species Occurring in the Cranbrook Forest District and in the Southern Rocky Mountain Management Plan Area. March, 2002. Page 17.
C16		Biodiversity Emphasis	Medium		KBLUP IS: Chapter 3.2, Page 3-6; Appendix 3, Appendix C
C16	RMZ C-I04	Biodiversity-General	1. Retain forest and rangeland ecological elements and processes, including species richness, distribution and diversity at moderate risk. 2. Retain attributes for old growth dependent species and fur bearers as well as critical habitat	2.1 In establishing priorities for OGMA's, consider spruce and balsam in the tributaries of Lodgepole and Ram Creeks.	KBLUP IS: Appendix 3, Page 22

LU #	**Drainage** (if applicable)	**Topic**	**Key resource values**	**Management direction** (existing or recommended)	**Reference (Source)** *(Document, date, section and/or pages)*
			for ecosystem representatives. 3. Ensure habitat requirements for red and blue listed species are achieved.	3.1 Initiate an inventory project for the Tailed Frog. 3.2 The Tailed Frog should be designated as identified wildlife species under the FPC.	
C16	CORE polygon 1-2 Flathead – west side	Biodiversity - General	Designated land use: Integrated. Low mountains and ridges with mostly pine dominated forest stands. Part of the Border Ranges Ecosection. Manage for north-south and east-west connectivity from Waterton/Glacier/Akamina system to Mt Broadwood/Elk Valley and Wigwam systems. Critical to retain this connectivity between large core areas for internationally significant wolf populations.	T1 Guideline: Interior Fish-Forestry Guidelines / Riparian and Streamside Management Guidelines / Wildlife Tree Guidelines / Specific plans for red/blue listed species management	CORE 1994 East Kootenay Land Use Plan, Polygon 1-2 Record of Information + T1 Guideline.
C16	RMZ C-S05	Biodiversity-General	1. Maintain **regional connectivity to ensure the north-south connection between the Elk Valley and the U.S.**-to contribute to ecosystem representation (BRR-MSdk), -to serve as habitat linkage for the seasonal migration of grizzly bears, wolves, ungulates and R & E species, and- to support Akamina-Kishinena Park. 2. Ensure habitat requirementst for red and blue listed, and regionally significant species are achieved.	1.1 Apply the connectivity guidelines within the regional connectivity corridor as indicated in Chapter 3.3. (note: Ch 3.3 Pages 6-8, identifies none of this unit as being important for regional connectivity) **2.1 Designate Rocky Mtn Red Tailed Frog, Least Chipmunk, Southern Red-Backed Vole and the Tailed Frog as identified wildlife under the FPC.** **2.2 The rare plant communities in the Proctor Lake area should be designated as a Sensitive Area under the FPC.**	KBLUP IS: Appendix 3, Page 9
C16		Biodiversity-Connectivity	None of this unit is identified as being important for regional connectivity. *How about the Flathead River?*		KBLUP IS: Chapter 3.3, Pages 6-8.
C16	CORE polygon 1-3 - Flathead river corridor	Biodiversity - General	-Land use designation: Special Management. -Part of the Border Ranges and Crown of the Continent Ecosections. -Flathead river valley and riparian zone running north-south. No permanent human occupation. A major movement corridor for carnivores and supports a large grizzly population. Bull trout and wolf populations are management concerns. -Priority area for Total Resource Plan	T2 Guideline: -Enhanced FENs; riparian protection; wide corridors; significant OG protection; -Landscape habitat mosaic is diverse in stand, age classes, types, structures and composition. -Rare and unique habitats and species protected. -Providing habitat for regional inter-protected area linkage corridors and buffers is a part of management objectives for area. -Minimize expansion of settlement or industrial/commercial use	CORE 1994 East Kootenay Land Use Plan, Polygon 1-3 Record of Information + T2 Guideline.

LU #	**Drainage** (if applicable)	**Topic**	**Key resource values**	**Management direction** (existing or recommended)	**Reference (Source)** *(Document, date, section and/or pages)*
			-Priority for gov't to give immediate consideration to wide ranging carnivores, ungulate winter range, fisheries and general biodiversity.	-Restoration/rehabilitation of disturbed sites	
C16	CORE polygon 1-11 Harvey Ck	Biodiversity-General	Land use designation: Dedicated Low emphasis biodiversity.	T2 Guideline: -Enhanced FENs; riparian protection; wide corridors; significant OG protection; -Landscape habitat mosaic is diverse in stand, age classes, types, structures and composition. -Rare and unique habitats and species protected. -Providing habitat for regional inter-protected area linkage corridors and buffers is a part of management objectives for area. -Minimize expansion of settlement or industrial/commercial use -Restoration/rehabilitation of disturbed sites	CORE 1994 East Kootenay Land Use Plan, Polygon 1-11 Record of Information + T2 Guideline.
C16	CORE polygon 1-2	Biodiversity – Old Growth	Remnant old growth. Important to manage remaining old growth for thermal cover, snow interception and fur-bearer habitat.	T1 Guideline: FENs / Interior Fish-Forestry-Wildlife Guidelines / Regional Wildlife Habitat Guidelines.	CORE 1994 East Kootenay Land Use Plan, Polygon 1-2 Record of Information + T1 Guideline.
C16	CORE polygon 1-3 + 1-11	Biodiversity-Old Growth		T1 Guideline: FENs / Interior Fish-Forestry-Wildlife Guidelines / Regional Wildlife Habitat Guidelines	CORE 1994 East Kootenay Land Use Plan, Polygon 1-3 + 1-11 Record of Information + T1 Guideline.
C16	CORE polygon 1-2, 1-3, 1-11	Biodiversity – Natural grasslands	Limited to small areas of NDT5-alpine tundra and subalpine parkland	T1 Guideline: Weed control / Maintenance of riparian habitats / Grazing management guidelines/ Off-road vehicle control / Monitoring of range condition and trend in terms of domestic and wildlife grazers	CORE 1994 East Kootenay Land Use Plan, Polygon 1-2; 1-3; 1-11 Records of Information, T1 Guideline + Natural Disturbance Type mapping.
C16	Flathead Range Complex	Ungulates – Elk	Flathead Wildlife Range Complex is elk winter and spring habitat designated for Active Wildlife Management (Category 2). Biophysical Units: • Class 2 – elk, moose, goat winter winter habitat. • Class 3 – all ungulate species winter habitat. • Class 3 – all ungulate species summer range This Range Complex is located in LU: C16 and C18	Wildlife management would be given equal consideration in specific areas. A combination of the following general management and enhancement techniques would be actively pursued in an interated resource management strategy: -Logging which could benefit/complement wildlife; -Integated silvicultural practices; -Exploration/mining reclamation; -Access planning; -Impact management activities negotiated through the Mine Development Review Process	Elk-Flathead Operational Wildlife Plan. Prepared Jointly by the Planning and Assessment Branch and Cranbrook Wildlife Branch, MOE. December, 1987. Page 13, and Appendix 1, Page 1-3.

LU #	**Drainage** (if applicable)	**Topic**	**Key resource values**	**Management direction** (existing or recommended)	**Reference (Source)** *(Document, date, section and/or pages)*
			5 known mineral licks are located in C16 and 4 known mineral licks are located in C18 (refer to Elk-Flathead Operational Wildlife Plan Map and Cross Reference in the LU Summary background information binder).		
C16	Flathead Range Complex	Ungulates – Elk	Flathead Wildlife Range Complex is elk winter and spring habitat designated for Active Wildlife Management (Category 2). Biophysical Units: • Class 2 – elk, moose, goat winter winter habitat • Class 3 – all ungulate species winter habitat • Class 3 – all ungulate species summer range This Range Complex is located in LU: C16 and C18; 5 known mineral licks are located in C16 and 4 known licks are located in C18 (refer to Elk-Flathead Operational Wildlife Plan Map and Cross Reference in the LU Summary background information binder).	Wildlife management would be given equal consideration in specific areas. A combination of the following general management and enhancement techniques would be actively pursued in an interated resource management strategy: -Logging which could benefit/complement wildlife; -Integated silvicultural practices; -Exploration/mining reclamation; -Access planning; -Impact management activities negotiated through the Mine Development Review Process.	Elk-Flathead Operational Wildlife Plan. Prepared Jointly by the Planning and Assessment Branch and Cranbrook Wildlife Branch, MOE. December, 1987. Page 13, and Appendix 1, Page 1-3.
C16	RMZ C-I04	Ungulates	1. Maintain abundance of elk, mule deer, Rocky Mountain Goats and Bighorn Sheep within the sustainable carrying capacity of their habitat.	1.1 Maintain foraging opportunities for wildlife with no domestic livestock tenures allocated within the unit 1.2 The mineral lick in McClatchie Creek should be designated as a Sensitive Area under the FPC	KBLUP IS: Appendix 3, Page 22
C16	RMZ C-S05	Ungulates	1. Maintain abundance of elk, mule deer, Rocky Mountain Goats and Bighorn Sheep within the sustainable carrying capacity of their habitat.	1.1 Maintain suitable summer habitat for mule and white-tailed deer within this unit through application of the biodiversity emphasis under FPC 1.2 No domestic livestock tenures to be allocated in this unit.	KBLUP IS: Appendix 3, Page 10
C16		Ungulates	Ungulate Winter Range (XE)		KBLUP IS: Ch 3.5, Pages 17-24
C16	CORE polygon 1-2, 1-3, 1-11	Ungulates	Important ungulate winter range, particularly polygon 1-3 Flathead river corridor.	T2 Guideline applies to ungulate winter range throughout LU 16: -Manage for optimal mix of thermal cover, snow interception and browse production (habitat adjacency key) -Appropriate mix of silvicultural systems and treatments to maintain habitats.	CORE 1994 East Kootenay Land Use Plan, Polygon 1-2; 1-3; 1-11 Records of Information, T2 Guideline.
C16		Wide ranging carnivores	Priority 1 Grizzly Bear Habitat		KBLUP IS: Ch 3.4, Pages 8-17

LU #	Drainage (if applicable)	Topic	Key resource values	Management direction (existing or recommended)	Reference (Source) *(Document, date, section and/or pages)*
C16	CORE polygon 1-2	Wide ranging carnivores	1-2 Important wildlife value;	T1Guideline: Interior fish-forestry guidelines / FENs / Access control / Landfill regulations / Management of prey species / Maintenance of seasonal feeding and breeding areas / Harvesting regulations	CORE 1994 East Kootenay Land Use Plan, Polygon 1-2 Record of Information, T1 Guideline.
C16	RMZ C-S05	Wide ranging carnivores	1. Maintain regionally significant grizzly bear habitat and grizzly bear population. 2. Ensure the regionally significant wolf populations are maintained or enhanced.	1.1 Maintain high productivity berry patches by: -introducing controlled fires; and - using no herbicides in high productivity berry patch areas. 1.2 Complete the Flathead River Drainage Grizzly Bear Inventory Project. 2.1 Maintain sufficient prey habitat and therefore adequate prey populations. 2.2 Continue cooperative wolf management with the U.S. gov't.	KBLUP IS: Appendix 3, Page 10
C16	CORE polygon 1-3, 1-11	Wide ranging carnivores	A major movement corridor for carnivores. Supports internationally significant grizzly and wolf populations*. *see Global/Ecosystem Sectors description of polygon 1-3 values in black binder under CORE tab.	T2 Guideline: -Seasonal feeding and breeding habitats protected; -Conservation of seasonal feeding and breeding areas; silvicultural treatments to favour food production; -Road densities minimal and access management coordinated to avoid conflicts with habitat use. -Minimal human habitation and no sanitary landfills. -Predator control only under special circumstances. -Special grazing management to protect carnivore values.	CORE 1994 East Kootenay Land Use Plan, Polygon 1-3 Record of Information, T2 Guideline.
C16		Wide ranging carnivores	Unique community of carnivore species resides in the transboundary Flathead that appears unmatched in North America for its variety, completeness, use of valley bottom lands, and density of species which are rare elsewhere.	• All of the carnivore species cross over the international border, making it critical that the Flathead River Basin be managed as one integral, ecological unit. • Implement the carnivore conservation principles.	J.Weaver, The Transboundary Flathead, British Columbia and Montana: A Critical Landscape for Carnivores in the Rocky Mountains. 2001, p36.
C16		Wide ranging carnivores	Value: habitat and prey population management. Carnivore conservation principle (1): maintain food resources with management of habitat and prey populations.	• Maintain the shelter and forage value of mature and old-growth conifers along the Flathead River for ungulates in winter. • Manage for higher levels of ungulate populations over time by setting conservative quotas for ungulate harvest, especially after harsh winters. • Maintain foraging opportunities for bears in riparian sites, avalanche chutes and burned areas by providing adequate cover and security. • Maintain productive habitat of dense (>5000 stems/ha), young	J.Weaver, The Transboundary Flathead, British Columbia and Montana: A Critical Landscape for Carnivores in the Rocky Mountains. 2001, p39-40

LU #	**Drainage** (if applicable)	**Topic**	**Key resource values**	**Management direction** (existing or recommended)	**Reference (Source)** *(Document, date, section and/or pages)*
				lodgepole pine and spruce for snowshoe hare and lynx by delaying thinning or leaving un-thinned patches across the cutting unit. • Retain remaining stands of old-growth spruce in the commercial forests of the transboundary Flathead as important habitat for martens. Montana's Flathead National Forest Plan specifies retention of all remaining old-growth stands (Amendment 21). British Coumbia should establish similar direction for remnant stands of old-growth spruce.	
C16	From the road paralleling the west side of the Flathead River eastward through C18. All	Wide ranging carnivores	Value: security. Carnivore conservation principle (2): provide security from excessive mortality with networks of core reserves and other precautionary measures.	• Provide a permanent, year-round core reserve for carnivores in the upper Flathead River in British Columbia. Core reserve to extend from the road paralleling the west side of the Flathead River eastward to the Continental Divide and from the international border north to about Tombstone Mountain (north of Middlepass Creek) (Fig. 15, p44). Core reserve would contribute significantly to vital protection provided by the adjoining Waterton Lakes National Park in Alberta and Glacier National Park in Montana. • Provide a network of seasonal or permanent security zones throughout the transboundary Flathead basin and elsewhere in the new 'Southern Rocky Mountain Conservation Area'. Consideration of focal species' key habitats will be used to guide the strategic identification and delineation of security zones (p 45).	J.Weaver, The Transboundary Flathead, British Columbia and Montana: A Critical Landscape for Carnivores in the Rocky Mountains. 2001, p42-45.
C16	RMZ C-I04 & C-S05	Fisheries	1. Maintain wild stocks and habitat for spawning, rearing and overwintering Bull Trout. 2. Rebuild wild fish stocks and habitats for Cutthroat and Bull Trout in the Flathead River.	1.1 Principle tributaries should be priority areas for WRP assessments / projects. 2.1 Restore fish habitat and identify strategies to offset impacts of resource development. 2.2 Cooperate with the State of Montana on monitoring stock status of Bull Trout. 2.3 Assess current status of fish populations and fish habitat. 2.4 Review current management strategies.	KBLUP IS: Appendix 3, Page 10 & 23
C16	CORE polygons 1-2, 1-3, 1-11	Fisheries	Polygon 1-2 Flathead- west side: Cabin, Howell, Cauldrey Creeks are internationally significant Bull trout spawning creeks for the Flathead system.	T2 Guideline: -Minimal human-caused sedimentation. -Protection of streamside and riparian habitats; no roads in riparian	CORE 1994 East Kootenay Land Use Plan, Polygon 1-2; 1-3; 1-11 Records of Information, T2

LU #	Drainage (if applicable)	Topic	Key resource values	Management direction (existing or recommended)	Reference (Source) *(Document, date, section and/or pages)*
			Polygon 1-3 Flathead river corridor: Flathead river supports bull trout, cutthroat trout and whitefish.	without special permission, however, stream crossing normally acceptable. -Management for large organic debris. -Watershed sensitivity and ECA analysis prior to development. -Protection of spawning and rearing habitat. -Reclamation and hydrologic stabilization where necessary. -Assume level one guidelines in place where level two's are applied.	Guideline.
C16	CORE polygon 1-1	Coal Mining	1. Flathead coalfield • Medium and high value coal lands are located throughout LU C16 except in the southwest from Couldrey Ridge to Mount Hefty. • The high value lands (exposed coal bearing strata) of the Flathead coalfield are four widely dispersed blocks including: Sage Creek area (1,154 ha), Cabin Creek area (577 ha) and Harvey Creek area (962 ha) (p7) located in LU C16. Sage and Cabin Creek areas' coal values were not identified with enhanced resource development zonation in CORE or KBLUP. Lillyburt area (1,090 ha) (p7), in the vicinity of Flathead townsite, is located in LU C17. 2. Crowsnest coalfield • Medium and high value coal lands are located from LU C16 north boundary northward. • The high value lands of the Fernie block lay along the west side of LU C16's north boundary, and extend north through LU C17, C19, C24 and C38. The Fernie block high value lands area is 73,333 ha (p7). • The high value lands of Corbin area (962 ha) and Tent Mountain area (1,603 ha) (p7) are located in LU C19.	Definitions: • High value coal lands include the area from the outcrop of the coal bearing strata to its inferred depth limit (p1). • Medium value coal land is a corridor for mining related activities and infrastructure, surrounding the exposed coal bearing strata (high value coal lands) (p1).	Morris, Bob. Resource Estimate: East Kootenay Coalfields, 1994. Pages 1, 4, 7; Fig. 5: E.K. Coal Fields Location Map; and Fig. 7: Coal Value Lands Map. Refer to Black Binder, Coal tab for maps.
C16		Mining	Sage Creek Coal Project	Is not supported	Commercial Hunting & Fishing Focus Group session, March 27, 2002.

LU #	Drainage (if applicable)	Topic	Key resource values	Management direction (existing or recommended)	Reference (Source) *(Document, date, section and/or pages)*
C16	CORE polygon 1-2	Mining	High value coal deposits at Sage and Cabin Creeks: potential for additional deposits in vicinity. Coal sector proposes that these deposits along with associated infrastructure and transportation corridors be designated as Dedicated. The same recommendation applies to any undiscovered deposits. Concern expressed by global energy and ecosystem sectors.	Land use designation: Integrated T1 Guideline: Mines Act / Health, Safety and Reclamation Code / Mineral Tenure Act / Mine Development Assessment Act / Water Act / Fisheries Act / Forest Act / Guidelines for Mineral Exploration / Guidelines for Coal Exploration / Petroleum and Natural Gas Act / Geothermal Resources Act / other related regulations and guidelines	CORE 1994 East Kootenay Land Use Plan, Polygon 1-2 Record of Information + T1 Guideline.
C16	CORE polygon 1-3	Mining	Coal deposits at Harvey Creek	Land use designation: Special Management -Provide road access through west side of polygon 1-3 to Harvey Creek. (If this deposit were developed, there would be a need to develop a haul road through the Lodgepole River drainage.) -Mining activities will maintain a 1km buffer from the Flathead River. T1 Guideline: Mines Act / Health, Safety and Reclamation Code / Mineral Tenure Act / Mine Development Assessment Act / Water Act / Fisheries Act / Forest Act / Guidelines for Mineral Exploration / Guidelines for Coal Exploration / Petroleum and Natural Gas Act / Geothermal Resources Act / other related regulations and guidelines	CORE 1994 East Kootenay Land Use Plan, Polygon 1-3 Record of Information + T1 Guideline.
C16	RMZ C-E04	Mining	Coal deposits at Harvey Creek	Priority management emphasis is on the coal resources and their exploration, development and production. Guidelines for Coal ERDZ are only provided for C-E01 (Fording area. LU C20, 21, 22, 23, 38). Specific guidelines have not been developed for C-E02 to C-E04.	KBLUP IS: Ch 3.14, Pages 78-79
C16	CORE polygon 1-11 (KBLUP: Coal-ERDZ C-E04)	Mining	Coal deposits at Harvey Creek	Land use designation: Dedicated -Provide road access through west side of polygon 1-3 to Harvey Creek. (If this deposit were developed, there would be a need to develop a haul road through the Lodgepole River drainage.) -Mining activities will maintain a 1km buffer from the Flathead River. T1 Guideline: Mines Act / Health, Safety and Reclamation Code / Mineral Tenure Act / Mine Development Assessment Act / Water Act / Fisheries Act / Forest Act / Guidelines for Mineral Exploration / Guidelines for Coal	CORE 1994 East Kootenay Land Use Plan, Polygon 1-11 Record of Information + T1 Guideline.

Southern Rocky Mountain Management Plan
Landscape Unit Summary June 18, 2002

LU #	**Drainage** (if applicable)	**Topic**	**Key resource values**	**Management direction** (existing or recommended)	**Reference (Source)** *(Document, date, section and/or pages)*
				Exploration / Petroleum and Natural Gas Act / Geothermal Resources Act / other related regulations and guidelines	
C16	CORE polygon 1-2, 1-3, 1-11	Oil and Gas	High oil and gas potential throughout.		CORE 1994 East Kootenay Land Use Plan, Polygon 1-2; 1-3; 1-11 Records of Information.
C16	CORE polygon 1-2, 1-3, 1-11	Unacceptable Uses	Polygon 1-3 + 1-11: Settlement and General Industrial/Commercial Uses are not acceptable uses. Polygon 1-2: Settlement is not an acceptable use, but General Industrial/Commercial Uses are acceptable.		CORE 1994 East Kootenay Land Use Plan, Polygon 1-2; 1-3; 1-11 Records of Information
C16-Adjacent	Montana: Flathead National Forest: Forest-wide Management Direction	Agriculture (Range)	Noxious Weeds	Inventory, map and complete an activity schedule for five significant noxious weed plant communities during the first planning period (spotted knapweed, dalmation toadflax, leafy spurge, goatweed, and whitetop)	Flathead National Forest Forest Plan. Northern Region Forest Service. U.S. Department of Agriculture. August 2001. Page II-8
C16-Adjacent	Montana: Flathead National Forest: Forest-wide Management Direction	Agriculture	Grazing Management	GM-1: Modify grazing practices that retard or prevent attainment of riparian management objectives or are likely to adversely effect inland native fish. Suspend grazing if adjusting practices is not effective in meeting riparian management objectives. GM-2: Locate livestock handling and/or management facilities outside of riparian habitat conservation areas. Relocate or close facilities where these objectives cannot be met. GM-3: Limit livestock trailing, bedding, watering, salting, loading, and other handling efforts to those areas and times that would not retard or prevent attainment of riparian management objectives or adversely affect inland native fish. GM-4: Adjust wild horse and burro management to avoid impacts that prevent attainment of management objectives or adversely affect inland native fish. • Additional guidelines are outlined on pages II-46 and II-47	Flathead National Forest Forest Plan. Northern Region Forest Service. U.S. Department of Agriculture. August 2001. Page II-30.
C16-Adja	Montana Flathead	Agriculture	Grazing	• Domestic livestock grazing is not compatible. Grazing permits will not be issued	Flathead National Forest Forest Plan. Northern Region

LU #	Drainage (if applicable)	Topic	Key resource values	Management direction (existing or recommended)	Reference (Source) *(Document, date, section and/or pages)*
cent	National Forest: MA 11				Forest Service. U.S. Department of Agriculture. August 2001. Page III-43 to III-51.
C16-Adjacent	Montana: Flathead National Forest: MA 12	Agriculture	Grazing and riparian areas.	If a conflict occurs between riparian values and livestock use, it must be resolved by permittee action and co-operation. If the conflict cannot be resolved or mitigated, livestock numbers will be reduced or allotment closed. Range improvements may be constructed for resource protection and to mitigate major conflicts with adjacent private or public interest.	Flathead National Forest Forest Plan. Northern Region Forest Service. U.S. Department of Agriculture. August 2001. Page III-57.
C16-Adjacent	Montana: Flathead National Forest: Forest-wide Management Direction	Access Management	Access.	Develop and implement a road management program, with road use restrictions and closures, that is responsive to resource protection needs and public concerns.	Flathead National Forest Forest Plan. Northern Region Forest Service. U.S. Department of Agriculture. August 2001. Page II-5.
C16-Adjacent	Montana: Flathead National Forest: Forest-wide Management Direction	Recreation	A range of quality recreation opportunities.	Provide a range of quality outdoor recreation opportunities within a forest environment that can be developed for visitor use and satisfaction. Provide a range of quality recreation opportunities including motorized and non-motorized, in an undeveloped forest environment. RM-2: Adjust dispersed and developed recreation practices that retard or prevent attainment of riparian management objectives or adversely affect inland native fish. Where adjustment measures such as education, use limitations, traffic control devices, increased maintenance, relocation of facilities, and/or specific site closures are not effective in meeting riparian management objectives and avoiding adverse effects on inland native fish, eliminate the practice or occupancy.	Flathead National Forest Forest Plan. Northern Region Forest Service. U.S. Department of Agriculture. August 2001. Page II-5 and II-31.
C16-Adjacent	Montana: Flathead National Forest: Forest-wide	Recreation	Visuals.	Visual resource analysis will be part of the planning process for specific areas of the forest. Through the use of proper design and scheduling of activities, potential impacts on the visual resource will be dispersed and not concentrated within an area or travel corridor within a short time frame.	Flathead National Forest Forest Plan. Northern Region Forest Service. U.S. Department of Agriculture. August 2001. Page II-22.

LU #	**Drainage** (if applicable)	**Topic**	**Key resource values**	**Management direction** (existing or recommended)	**Reference (Source)** *(Document, date, section and/or pages)*
	Management Direction			Special concerns due to catastrophic events will be handled on a case by case basis.	
C16-Adjacent	Montana: Flathead National Forest: MA 11	Recreation	Recreational use of important grizzly bear areas	• Maintain and enhance grizzly bear habitat by implementing appropriate management and investment activities and controlling public access • Non-motorized recreational opportunities will be provided at current levels, but will not be encouraged and may be restricted if conflicts between recreationists and grizzly bear occur • Management of other resources must be compatible with the grizzly bear management objectives. • Provide for security from human conflict through year-round closures of all newly constructed roads and closures of existing roads and trails as necessary to maintain the security of the area. Monitor and manage all human activity in the area • Signage of grizzly bear useage • Trails may be closed if necessary • New roads will be closed to public use except for snowmobiles in the winter. • Motorized access restrictions from April 1 to November 30 to all roads except Trail Creek and the lower portion of Thoma Creek roads to provide security for grizzly bears. • Access to Frozen Lake will be from the Kootenai National Forest. • Maintain at the maximum, a road density at the 1981 level.	Flathead National Forest Forest Plan. Northern Region Forest Service. U.S. Department of Agriculture. August 2001. Page III-43 to III-51.
C16-Adjacent	Montana: Flathead National Forest: MA 11	Recreation	Recreational use of riparian areas	• Generally, trails will not be constructed in riparian areas except as needed to cross the area. • Existing trails should be relocated outside of riparian areas if there are erosion problems that cannot be mitigated. • Off-road vehicle use, except by snowmobiles, is generally incompatible except on roads or trails. • New roads will generally not be built within one-half mile of lakes.	Flathead National Forest Forest Plan. Northern Region Forest Service. U.S. Department of Agriculture. August 2001. Page III-55 and III-58.
C16-Adjacent	Montana: Flathead National Forest: Forest-wide	Wilderness	Wilderness.	Intensify management of the Forest's three Wildernesses and the Flathead Wild and Scenic River System to ensure resource protection while providing quality recreation opportunities.	Flathead National Forest Forest Plan. Northern Region Forest Service. U.S. Department of Agriculture. August 2001. Page II-5

LU #	**Drainage** (if applicable)	**Topic**	**Key resource values**	**Management direction** (existing or recommended)	**Reference (Source)** *(Document, date, section and/or pages)*
	Management Direction				

C16-Adjacent	Montana: Flathead National Forest: Forest-wide Management Direction	Cultural Heritage	Cultural heritage	Meet all legal requirements each year. During the first decade, nominate significant cultural sites to the National Register of Historic Places.
				• Cultural resource inventories will be conducted on all ground-disturbing projects.
				• Known, significant cultural resource sites will be protected from inadvertent or intentional damage or destruction. Protective measures may include:
				  • Fences or gates
				  • Posting warning signs about antiquities law
				  • Protection of site locational information
				  • Law enforcement measures such as patrolling and investigation of antiquities violations
				• An effort will be made to co-ordinate cultural resource issues and concerns with appropriate native American groups and other agencies.
					Flathead National Forest Forest Plan. Northern Region Forest Service. U.S. Department of Agriculture. August 2001. Page II-12, II-23, II-24, and II-25.

C16-Adjacent	Montana: Flathead National Forest: Forest-wide Management Direction	Watershed - and Fisheries	High water quality	Maintain high quality water which meets or exceeds State and Federal water quality standards, to protect migratory and resident fisheries, water-based recreation opportunities and public water supplies. Maintain soil productivity and minimize erosion.	Flathead National Forest Forest Plan. Northern Region Forest Service. U.S. Department of Agriculture. August 2001. Page II-4 and II-55
C16-Adjacent	Montana: Flathead National Forest: Forest-wide Management Direction	Watershed	Riparian values- maintain water quality	Maintain or restore water quality to a degree that provides for stable and productive riparian and aquatic ecosystems. A watershed cumulative effects feasibility analysis for projects involving significant vegetation removal is required prior to implementation. In flood plains and wetlands any activity must adhere to the requirements of executive orders EO11988 (reduce the risk of floods) and EO11990 (minimize damage to or loss of wetlands and	Flathead National Forest Forest Plan. Northern Region Forest Service. U.S. Department of Agriculture. August 2001. Page II-6 and II-50

LU #	**Drainage** (if applicable)	**Topic**	**Key resource values**	**Management direction** (existing or recommended)	**Reference (Source)** *(Document, date, section and/or pages)*
				preserve and enhance the natural and beneficial values of wetlands) Additional requirements for road design and building; bridges, culverts and other drainage structures; road maintenance; timber harvest; site preparation; trails; picnic areas, campgrounds and packer camps; and community water supplies are outlined on pages II-53 and II-54.	
C16-Adjacent	Montana: Flathead National Forest: Forest-wide Management Direction	Watershed	Riparian values – maintain natural stream processes	Maintain or restore stream channel integrity channel processes, and the sediment regime (including the element of timing, volume, and character of sediment input and transport) under which the riparian and aquatic ecosystems developed.	Flathead National Forest Forest Plan. Northern Region Forest Service. U.S. Department of Agriculture. August 2001. Page II-6.
C16-Adjacent	Montana: Flathead National Forest: Forest-wide Management Direction	Watershed	Riparian values – maintain or restore natural in-stream flows.	Maintain or restore in-stream flows to support healthy riparian and aquatic habitats, the stability and effective function of stream channels, and the ability to route flood discharges.	Flathead National Forest Forest Plan. Northern Region Forest Service. U.S. Department of Agriculture. August 2001. Page II- 6.
C16-Adjacent	Montana: Flathead National Forest: Forest-wide Management Direction	Watershed	Riparian values – maintain or restore natural water table function.	Maintain or restore natural timing and variability of the water table elevation in meadows and wetlands.	Flathead National Forest Forest Plan. Northern Region Forest Service. U.S. Department of Agriculture. August 2001. Page II-6.
C16-Adjacent	Montana: Flathead National Forest: Forest-wide Management Direction	Watershed	Riparian values – riparian vegetation.	Maintain or restore the diversity and productivity of native and desired non-native plant communities in riparian zones. Riparian vegetation will provide the following: • An amount and distribution of large woody debris characteristic of natural aquatic and riparian ecosystems. • Adequate summer and winter thermal regulation within	Flathead National Forest Forest Plan. Northern Region Forest Service. U.S. Department of Agriculture. August 2001. Page II-6 II-13 and II-14.

LU #	**Drainage** (if applicable)	**Topic**	**Key resource values**	**Management direction** (existing or recommended)	**Reference (Source)** *(Document, date, section and/or pages)*
				the riparian and aquatic zones • Stability to stream-banks to levels that help to achieve rates of surface erosion, bank erosion, and channel migration characteristics of those under which the communities developed. Standard widths for Riparian Habitat Conservation Areas: • Category 1 (fish bearing streams) distance equal to the height of 2 site potential trees or 300 feet slope distance, whichever is greatest, on both sides of the creek. • Category2 (permanently flowing, non-fish bearing streams) distance equal to the height of 1 site potential tree or 150 feet slope distance, whichever is greatest, on both sides of the creek. • Category 3 (ponds, lakes, reservoirs and wetlands greater than 1 acre) distance equal to the height of 1 site potential tree or 150 feet slope distance, whichever is greatest, on both sides of the water-body. • Category 4 (seasonally flowing or intermittent streams, wetlands less than 1 acre, landslides and landslide-prone areas). For priority watersheds: distance equal to the height of 1 site potential tree or 100 feet slope distance, whichever is greatest, on both sides of the creek. For non-priority watersheds: distance equal to the height of 1/2 site potential tree or 50 feet slope distance, whichever is greatest, on both sides of the creek	
C16-Adjacent	Montana: Flathead National Forest: Forest-wide Management Direction	Biodiversity	Viability of native species.	Ensure that the Forest Service actions do not contribute to the loss of viability of native species.	Flathead National Forest Forest Plan. Northern Region Forest Service. U.S. Department of Agriculture. August 2001. Page II-5.
C16-Adja	Montana: Flathead	Biodiversity	Ecological reserves	A number of "research natural areas are established. The objective is to maintain their natural condition and features for non-	Flathead National Forest Forest Plan. Northern Region

LU #	**Drainage** (if applicable)	**Topic**	**Key resource values**	**Management direction** (existing or recommended)	**Reference (Source)** *(Document, date, section and/or pages)*
cent	National Forest: Forest-wide Management Direction			manipulative research and baseline comparisons, public education and conservation of biological diversity. A number of "botanical special interest areas" are established. The objective is to protect unusual or uncommon botanical values, for purposes of conservation, scientific research and public enjoyment.	Forest Service. U.S. Department of Agriculture. August 2001. Page II-14 and II-15.
C16-Adjacent	Montana: Flathead National Forest: Forest-wide Management Direction	Biodiversity	Rare Plants	Adverse impacts to sensitive plants o their habitats should be avoided. If impacts cannot be avoided the significance of potential adverse effects on the population or its habitat within the area of concern and on the species as a whole will be analysed. Project decisions will not result in loss of species viability or create significant trends towards federal listing. Plant species of possible concern are listed on page II-45 and II-46 (27 plant species).	Flathead National Forest Forest Plan. Northern Region Forest Service. U.S. Department of Agriculture. August 2001. Page II-14 and II-15.
C16-Adjacent	Montana: Flathead National Forest: Forest-wide Management Direction	Biodiversity	Threatened and Endangered Species • water howellia	Provide sufficient habitat to promote the recovery of threatened and endangered species and conserve the ecosystems upon which they depend. • Water Howellia Riparian Management Objectives • No measurable increase in maximum water temperature • LWD > 20 pieces per mile, >12 inch diameter, >35 foot length. • Banks >80% stable • Lower Bank Angle - >75% of banks with <90 degree angle • Width/Depth Ratio of <10 (mean wetted width divided by mean depth) • Variable objectives for pool frequency (depends on wetted width of stream) • Retain a forested buffer of a minimum width of 300 feet from the margins of ponds that provide Howellia habitat (occupied and unoccupied) • No herbicide use	Flathead National Forest Forest Plan. Northern Region Forest Service. U.S. Department of Agriculture. August 2001. Page II-4 and 8 and 12; and II-26 and II-46.
C16-Adjacent	Montana: Flathead National Forest: Forest-wide	Biodiversity	Maintain old growth forests.	Maintain and recruit old growth forests to an amount and distribution that is within the 75% range around the median of the historical range of variability. Where current conditions are below this amount, actively manage to recruit additional old growth. • Prescribe landscape treatments that protect old growth forests	Flathead National Forest Forest Plan. Northern Region Forest Service. U.S. Department of Agriculture. August 2001. Page II-5 and II-9.

LU #	Drainage (if applicable)	Topic	Key resource values	Management direction (existing or recommended)	Reference (Source) *(Document, date, section and/or pages)*
	Management Direction			from disturbances that threaten old growth composition and structure. Treatment within existing old growth may be appropriate where current insect and disease conditions pose a major and immediate threat to other stands. • Where fuel conditions and potential fire regimes have been significantly affected by fire exclusion and timber management, manage landscape fuel conditions (amounts and spatial arrangement) to restore the historical fire regime and reduce the risk of undesirable fire events. Emphasize this objective in areas where wildlands interface with urban and rural areas of private property.	
C16-Adjacent	Montana: Flathead National Forest: Forest-wide Management Direction	Biodiversity	Species associated with dead and defective tree habitat.	Maintain appropriate tree species composition, size, and density of dead and defective trees and down logs. • Maintain a density of snags to requirements specified on page II-48. • Maintain coarse woody debris to requirements specified on page II-48 and 49,	Flathead National Forest Forest Plan. Northern Region Forest Service. U.S. Department of Agriculture. August 2001. Page II-8.
C16-Adjacent	Montana: Flathead National Forest: Forest-wide Management Direction	Biodiversity	Species associated with old growth forests.	Maintain ecological processes and provide for natural patch size distribution. Manage landscape patterns to develop larger old growth patch sizes where needed to satisfy wildlife habitat requirements.	Flathead National Forest Forest Plan. Northern Region Forest Service. U.S. Department of Agriculture. August 2001. Page II-8.
C16-Adjacent	Montana: Flathead National Forest (MA 11)	Biodiversity	Old growth distribution	Ensure proper distribution and quantity of old-growth habitat for each watershed. Thermal and hiding cover will be provided by old growth. The continued maintenance of these cover types will facilitate use of the riparian areas as travel corridors.	Flathead National Forest Forest Plan. Northern Region Forest Service. U.S. Department of Agriculture. August 2001. Page III-53.
C16-Adjacent	Montana: Flathead National Forest: Forest-wide	Biodiversity	Desired future landscape patterns and processes.	Improve local knowledge of native succession and disturbance regimes, and resulting landscape dynamics. Apply this knowledge in developing desired future landscape patterns and ecological processes for individual landscapes and watersheds.	Flathead National Forest Forest Plan. Northern Region Forest Service. U.S. Department of Agriculture. August 2001. Page II-5 and II-9.

LU #	**Drainage** (if applicable)	**Topic**	**Key resource values**	**Management direction** (existing or recommended)	**Reference (Source)** *(Document, date, section and/or pages)*
	Management Direction			• Maintain or restore landscape composition, structure and patterns to a condition similar to that expected under natural disturbance and succession regimes.	
C16-Adjacent	Montana: Flathead National Forest: Forest-wide Management Direction	Biodiversity	Forest matrix.	Provide sufficient retention of forest structure (large diameter live trees, snags and coarse woody debris) to provide for wildlife movement through the matrix surrounding old growth forests.	Flathead National Forest Forest Plan. Northern Region Forest Service. U.S. Department of Agriculture. August 2001 Page II-8
C16-Adjacent	Montana: Flathead National Forest: Forest-wide Management Direction	Biodiversity	Riparian values – viability of riparian-dependent communities.	Maintain or restore the habitat necessary to support populations of well-distributed native and desired non-native plant, vertebrate, and invertebrate populations that contribute to the viability of riparian-dependent communities.	Flathead National Forest Forest Plan. Northern Region Forest Service. U.S. Department of Agriculture. August 2001 Page II-6
C16-Adjacent	Montana: Flathead National Forest: Forest-wide Management Direction	Wildlife General	Threatened and Endangered Species • bald eagle • peregrine falcon	Provide sufficient habitat to promote the recovery of threatened and endangered species and conserve the ecosystems upon which they depend. • Bald Eagle Nest Management Plan required for each known territory • Peregrine Falcon Nest Management Plan required for each known territory For sensitive species (common loon, harlequin duck, flamulated owl, boreal owl, black-backed woodpecker, western big-eared bat, northern bog lemming, lynx, wolverine, fisher) develop Species Conservation Strategies.	Flathead National Forest Forest Plan. Northern Region Forest Service. U.S. Department of Agriculture. August 2001 Page II-4 and 8 and 12; and II-26.
C16-Adjacent	Montana: Flathead National Forest: Forest-wide Management Direction	Wildlife General	Sensitive species: • common loon • harlequin duck • flamulated owl • boreal owl • black-backed woodpecker • western big-eared bat	For sensitive species develop Species Conservation Strategies.	Flathead National Forest Forest Plan. Northern Region Forest Service. U.S. Department of Agriculture. August 2001 Page II-4 and 8 and 12; and II-26

LU #	**Drainage** (if applicable)	**Topic**	**Key resource values**	**Management direction** (existing or recommended)	**Reference (Source)** *(Document, date, section and/or pages)*
			• northern bog lemming • lynx • wolverine • fisher		
C16-Adjacent	Montana: Flathead National Forest: Forest-wide Management Direction	Ungulates - Big Game	Hunting, fishing and viewing opportunities	Provide appropriate habitat and access to maintain desired huntijng, fishing and viewing opportunities, in co-ordination with the Montana Department of Fish, Wildlife and Parks.	Flathead National Forest Forest Plan. Northern Region Forest Service. U.S. Department of Agriculture. August 2001. Page II-5.
C16-Adjacent	Montana: Flathead National Forest: Forest-wide Management Direction	Carnivores	Threatened and Endangered Species: • grizzly bear • gray wolf	Provide sufficient habitat to promote the recovery of threatened and endangered species and conserve the ecosystems upon which they depend.	Flathead National Forest Forest Plan. Northern Region Forest Service. U.S. Department of Agriculture. August 2001. Page II-4.
C16-Adjacent	Montana: Flathead National Forest: Forest-wide Management Direction	Carnivores	Grizzly Bear	• Ensure occupancy by reproducing females and limit mortality to achieve recovery goals in the recovery plan. • Provide habitat conditions adequate to provide for a successfully reproducing adult female in all BMU sub-units. • Within 10 years, security core areas are 68% to 100% • Within 10 years, total motorized access is less than 19% of the MS-1 (management situation 1= the high quality grizzly habitat) and MS-2 (management situation 2 = the movement areas between high quality habitat) with density greater than 2 miles per square mile. • Within 5 years, BMU sub-units having less than 60% security core area will provide at least 60%. • Within 5 years, BMU sub-units having total motorized access exceeding the current forest average of 24% with density > 2 miles per square mile will be brought to no more than 24% in MS –1 and MS-2 • Within 5 years, open motorized access is less than 19% of the	Flathead National Forest Forest Plan. Northern Region Forest Service. U.S. Department of Agriculture. August 2001. Page II-7 and II-8, and II-39 and II-40.

LU #	Drainage (if applicable)	Topic	Key resource values	Management direction (existing or recommended)	Reference (Source) *(Document, date, section and/or pages)*
				MS-1 and MS-2 with density greater than 1 mile per square mile. • Establish an active public information and education program that explains goals and objectives of grizzly bear management and steps required to recover the population. • Carcasses of wildlife, livestock or other attractants along highways, roads and trails will be removed a distance of ¼ of a mile from the roadway or otherwise made unavailable to bears. Removal should occur within 24 hours. • Contract and permits will include a clause providing for the cancellation, suspension, or temporary cessation of activities if such is needed to resolve a grizzly / human conflict. Permits for temporary on-site facilities will require that camps be located to avoid seasonally important bear habitats and contain the grizzly bear clauses developed to prevent people / bear conflict. • Measures will be taken regarding human and domestic stock food storage and garbage disposal in grizzly bear habitat. • Human access will be managed to meet grizzly bear recovery goals. Closures, no net increase in density of open motorized access routes or total motorized access routes. • Feeding of bears prohibited • Areas with a history of grizzly bear / human encounters or with important seasonal use by bears may be closed to human use. • No net decrease in the size or amount of core areas that provide security. • See additional guidelines pages II-40 to II-42 for timber management, fire management, range management, recreation management, minerals and special uses.	
C16-Adjacent	Montana: Flathead National Forest: (MA 11)	Carnivores	Grizzly Bear	• Maintain and enhance grizzly bear habitat by implementing appropriate management and investment activities and controlling public access • Manage for a habitat of approximately 40 percent security cove and about 60 percent open, with good geographic distributions of the following habitat components: • Burns, meadows, riparian areas, ridge-tops, shrubfields, side-hill parks, scree/talus, timber	Flathead National Forest Forest Plan. Northern Region Forest Service. U.S. Department of Agriculture. August 2001. Page III-43 to III-51

LU #	**Drainage** (if applicable)	**Topic**	**Key resource values**	**Management direction** (existing or recommended)	**Reference (Source)** *(Document, date, section and/or pages)*
				• Non-motorized recreational opportunities will be provided at current levels, but will not be encouraged and may be restricted if conflicts between recreationists and grizzly bear occur. • Management of other resources must be compatible with the grizzly bear management objectives. • Manage adjacent grizzly bear foraging areas only when previously cut unit sustains adequate hiding cover. • Provide a full range of habitat improvement practices including prescribed fire, shrub planting and timber harvest • Manage riparian areas to optimize grizzly travel, security and forage production. • Provide for security from human conflict through year-round closures of all newly constructed roads and closures of existing roads and trails as necessary to maintain the security of the area. Monitor and manage all human activity in the area. • Provide and maintain hiding cover over at least 70 percent of the area. • Signage of grizzly bear useage • Trails may be closed if necessary. • Domestic livestock grazing is not compatible. Grazing permits will not be issued. • Timber harvest may proceed, but grizzly bear habitat needs will dictate the amount, seasonal timing of harvest, silviculture systems, logging methods, reforestation and stand improvement practices used. • Road design and location will be responsive to grizzly bear habitat management needs. • New roads will be local, low standard roads.	

C16-Adjacent	Montana: Flathead National Forest: Forest-wide Management Direction	Carnivores	Gray Wolf	• Logging activities should not be conducted in or near the following areas at certain times of the year.
				  • Known or highly suspected den sites or rendezvous sites (March 15 to July 1)
				  • Ungulate calving / fawning areas (May 1 to July 15)
				  • Ungulate winter ranges (December 1 to April 15)
				• Maintain an active public information and education program
					Flathead National Forest Forest Plan. Northern Region Forest Service. U.S Department of Agriculture. August 2001. Page II-4 and II-44.
					Note: Recovery Plan not available

LU #	Drainage (if applicable)	Topic	Key resource values	Management direction (existing or recommended)	Reference (Source) *(Document, date, section and/or pages)*
				addressing wolf recovery and management. • See additional wolf habitat management direction in the "Recovery Plan (Unbound Appendix PP)"	– contact Flathead National Forest for a copy.
C16-Adjacent	Montana: Flathead National Forest: Forest-wide Management Direction	Fisheries	Riparian values – unique genetic fish stocks.	Maintain or restore riparian and aquatic habitats necessary to foster the unique genetic fish stocks that evolved within the specific geo-climatic region.	Flathead National Forest Forest Plan. Northern Region Forest Service. U.S. Department of Agriculture. August 2001. Page II-6.
C16-Adjacent	Montana: Flathead National Forest: Forest-wide Management Direction	Fisheries	Threatened and Endangered Species: • bull trout	Provide sufficient habitat to promote the recovery of threatened and endangered species and conserve the ecosystems upon which they depend. Management standards for streams with westslope cutthroat trout: • management activities in riparian zones will be designed to provide at least 40 recruitable trees (greater than 10 inch DBH) per 1000 feet of stream per 30 year period for pool formation and in-stream cover. • Stream canopy shading will be maintained so that maximum summer water temperatures do not exceed 17 degrees centigrade for moare than 4 hours a day nor more tan 14 days a year. • Fish habitat will be protected by controlling sediment sources and/or limiting management activities.	Flathead National Forest Forest Plan. Northern Region Forest Service. U.S. Department of Agriculture. August 2001. Page II-27.
C16-Adjacent	Montana: Flathead National Forest: Forest-wide Management Direction	Timber	Sustainable timber supply for local industry.	Provide a predictable and sustainable supply of timber products that is responsive to local industry and economies, consistent with other Forest management goals, objectives and standards.	Flathead National Forest Forest Plan. Northern Region Forest Service. U.S. Department of Agriculture. August 2001. Page II-5.
C16-Adjacent	Montana: Flathead National Forest:	Timber	Timber harvest in important Grizzly Bear areas	• Maintain and enhance grizzly bear habitat by implementing appropriate management and investment activities and controlling public access • Manage for a habitat of approximately 40 percent security cove	Flathead National Forest Forest Plan. Northern Region Forest Service. U.S. Department of Agriculture. August 2001. Page

LU #	**Drainage** (if applicable)	**Topic**	**Key resource values**	**Management direction** (existing or recommended)	**Reference (Source)** *(Document, date, section and/or pages)*
	(MA 11)			and about 60 percent open, with good geographic distributions of the following habitat components: - Burns, meadows, riparian areas, ridge-tops, shrubfields, side-hill parks, scree/talus, timber. • Management of other resources must be compatible with the grizzly bear management objectives. • Manage adjacent grizzly bear foraging areas only when previously cut unit sustains adequate hiding cover. • Provide a full range of habitat improvement practices including prescribed fire, shrub planting and timber harvest • Manage riparian areas to optimize grizzly travel, security and forage production. • Provide for security from human conflict through year-round closures of all newly constructed roads and closures of existing roads and trails as necessary to maintain the security of the area. Monitor and manage all human activity in the area. • Provide and maintain hiding cover over at least 70 percent of the area. • Timber harvest may proceed, but grizzly bear habitat needs will dictate the amount, seasonal timing of harvest, silviculture systems, logging methods, reforestation and stand improvement practices used.	III-43 to III-51.
C16-Adjacent	Montana: Flathead National Forest: Forest-wide Management Direction	Mining / Oil and Gas	Minerals and energy resources.	Facilitate exploration for, and the orderly and efficient development of, minerals and energy resources, recognizing the need for balanced multiple-use management.	Flathead National Forest Forest Plan. Northern Region Forest Service. U.S. Department of Agriculture. August 2001. Page II-5.
C16-Adjacent	Montana: Flathead National Forest: MA 11	Mining / Oil and Gas	Minerals and energy resources.	• The forest service proposes to withdraw the unleased portions of this area from all forms of mineral entry for both locatable and leaseable minerals. The purpose of this withdrawl is to permit more time to study the effects of man's activities on grizzly bear • Where oil and gas leasing decisions have already been made, general guidelines are as follows:	Flathead National Forest Forest Plan. Northern Region Forest Service. U.S. Department of Agriculture. August 2001. Page III-48 and III-49

LU #	**Drainage** (if applicable)	**Topic**	**Key resource values**	**Management direction** (existing or recommended)	**Reference (Source)** *(Document, date, section and/or pages)*
				• No seismic activity, new road construction or drilling above 5,800 feet between October 1, and April 30, to protect denning grizzly bears. • No seismic activity, new road construction, or dirlling in flood plain and riparian areas during the primary bear-use periods (April 1 to July 1, and October 1 to November 30). • In order to provide bear and wolf security areas, drilling, road construction, and other exploration activity should not occur simultaneously with timber sale activity in adjoining third order drainages.	
C16-Adjacent	Montana: Flathead National Forest: Forest-wide Management Direction	Unacceptable Uses	Unacceptable uses.	• Topsoil removal will not be allowed. • Occupancy trespass will not be allowed. • No new summer homesites will be allowed. • No permanent living facilities will be allowed.	Flathead National Forest Forest Plan. Northern Region Forest Service. U.S. Department of Agriculture. August 2001. Page II-57 and II-58, and III-49.
C17	Flathead PAS Unit 26	1993 Best PAS Areas	Area encompasses the drainage of the Flathead River north of the Canada/USA border, excluding the Howell and Cabin Creek drainages. PAS Value: This area is internationally significant for shared bull trout, grizzly bear and wolf populations with Montana. It includes the largest contiguous stand of old growth lodgepole pine and is internationally important as the Canadian extension of the Flathead River (a designated "Wild and Scenic River" in Montana). Diversity: Provides productive riparian areas along the wide floodplain of the Flathead River, including the largest contiguous stands of old growth lodgepole pine. Supports black bear, moose, elk, white tailed deer and cougar in a complex predator/prey relationship. Connects to Glacier N.P..	1993 recommended Priority Two area for protection.	Best P.A.S. Report. Identification, Evaluation and Ranking of Areas within the Kootenay Region that meet the Protected Areas Strategy Goals and Criteria. Prepared by Conservation, Recreation and Cultureal Heritage Subgroups of the Kootenay Regional Protected Areas Team (RPAT). November, 1993. Unit 26.

LU #	**Drainage** (if applicable)	**Topic**	**Key resource values**	**Management direction** (existing or recommended)	**Reference (Source)** *(Document, date, section and/or pages)*
			Viability: This unit is of sufficient size (56,134 ha), and watershed completeness to be viable, particularly in connection to Glacier National Park. Naturalness in 1993: Less than 25% disturbed by roads, logging and oil and gas development.		
C17	RMZ C-S05, C-I04	Agriculture	Grazing	Maintain foraging opportunities for wildlife with no domestic livestock tenures allocated within the unit.	KBLUP IS: Appendix 3, Page 10 and Page 22
C17		Agriculture		No grazing permitted except for guide outfitter horses	Cranbrook Forest District Recreation Access Plan (DRAP), March, 2000. LU C17
C17	Flathead Range Unit	Agriculture	Flathead Range Agreement Holders: GT: David Eider - 73 AUMs GT: Harry Leuenberger - 54 AUMs	GT indicates that the Range Agreement Area matches the G/O territory Flathead Range Unit includes LU C16, C17 and C18	Cranbrook Forest District Range Unit Map and Range Agreement Holder information (refer to Range tab in black binder)
C17	CORE polygons 1-3, 2-3, 2-4	Agriculture	Grazing	Potential for increased agricultural activity. Intent is to pursue the possibility (CORE, East Kootenay Regional Table, Volume 3, Part B Management Guidelines, Agriculture Notes, AG2) Ecosystems Sector concerned re: grazing because of internationally significant bear and wolf populations. Any expansion may result in negative impacts on carnivores and ungulates. Outdoor Recreation Non-Motorized Sector concerned re: expansion of cattle grazing in this unit, however whole heartedly supports CRMPs and the work of the EK Trench Agriculture/ Wildlife Committee. (Refer to Sector Comments with Record of Information). T1 Guideline-Grazing tenures	CORE 1994 East Kootenay Land Use Plan, Polygon 1-3, 2-3, 2-4 Records of Information.
C17	RMZ C-S05 C-I04	Access Management	Ensure the range of objectives and strategies are integrated within the upper Flathead River and McEvoy Creek area, particularly as they relate to access for proposed development.	All proposals for new road development or expansions will be evaluated through either: a) an enhanced referral process as described in the Access Management Guidelines, Chapter 3.12 or b) special measures which, because of imminent development, require immediate attention.	KBLUP IS: Appendix 3, Page 9

LU #	**Drainage** (if applicable)	**Topic**	**Key resource values**	**Management direction** (existing or recommended)	**Reference (Source)** *(Document, date, section and/or pages)*
C17	F120; F185; F190	Recreation	1. Maintain a range of recreation opportunities from roaded resource land to semi-primitive non-motorized.	1.1 Motorized use restrictions may be required. 1.2 Manage the Flathead River as a Backcountry River Corridor consistent with Table 1.2. Apply for non-motorized use restriction through Transport Canada.	KBLUP IS: Appendix 3, Page 9
C17	RMZ C-I04	Recreation	Maintain a range of recreation opportunities from roaded resource land to semi-primitive non-motorized		KBLUP IS: Appendix 3, Page 22
C17		Recreation		Backcountry recreation management as per ROS system	KBLUP IS: Chapter 3.9, Page 54-57
C17	CORE polygon 1-3	Recreation-Commercial Tourism	-Area is used by two to three guide/outfitters. Very important area for grizzly bear, wolf, white tail deer, moose and elk. Ungulate winter range. -River: supports Bull trout; is used for rafting; and is a 'wild and scenic' river on US side of border, and is the major source of water for Flathead Lake.	T1 Guideline: -maintain traditional use access; -consultation and consensus on access issues (mining referrals would not normally be routed through tourism unless there was a substantial wilderness impact); -consultation on potential alternatives through resource extraction	CORE 1994 East Kootenay Land Use Plan, Polygon 1-3 Record of Information + T1 Guideline
C17	CORE polygon 2-3	Recreation-Commercial Tourism	Andy Good plateau: important cave complex requiring special management.	T1 Guideline: -maintain traditional use access; -consultation and consensus on access issues (mining referrals would not normally be routed through tourism unless there was a substantial wilderness impact); -consultation on potential alternatives through resource extraction.	CORE 1994 East Kootenay Land Use Plan, Polygon 2-3 Record of Information + T1 Guideline.
C17	CORE polygon 2-4	Recreation-Commercial Tourism	Important area for outfitter	T1 Guideline: -maintain traditional use access; -consultation and consensus on access issues (mining referrals would not normally be routed through tourism unless there was a substantial wilderness impact); -consultation on potential alternatives through resource extraction.	CORE 1994 East Kootenay Land Use Plan, Polygon 2-4 Record of Information + T1 Guideline.
C17	CORE polygon 1-3, 2-3, 2-4	Recreation-Visuals-tourism + general		T1 Guideline: -Management of high tourism value viewscapes for some enhanced analysis and landscape design (implying no change in timber volume). -Smoke management guidelines -Visual Quality Objectives guidelines apply (implying restrictions on timber volume)	CORE 1994 East Kootenay Land Use Plan, Polygon 1-3, 2-3, 2-4 Records of Information + T1 Guideline.
C17	CORE	Recreation-	Sense of Solitude	T1 Guideline:	CORE 1994 East Kootenay Land

LU #	**Drainage** (if applicable)	**Topic**	**Key resource values**	**Management direction** (existing or recommended)	**Reference (Source)** *(Document, date, section and/or pages)*
	polygon 1-3, 2-3	Sense of Solitude	Polygon 2-3 – Andy Good plateau cave complex requires special management.	-Local agreement preferred. -Full range of mechanized and non-mechanized access/activities can be allowed.	Use Plan, Polygon 1-3, 2-3 Records of Information + T1 Guideline.
C17	CORE polygon 2-4	Recreation-Sense of Solitude	Sense of solitude- last unroaded portion of the Flathead system. Rugged landscape; breathtaking views; alpine meadows. Undisturbed wilderness. Summer/fall use for hunting and hiking. (Refer to Black binder, CORE tab, polygon 2-4, Sector Comments)	T2 Guideline: -Local agreement preferred. -Sensitivity to Solitude experiences. -Enhanced management related to timing, seasonality, mode and distribution of mechanized access/activities, recognize existing and potential future use for tenure holders and consider mechanized recreational users.	CORE 1994 East Kootenay Land Use Plan, Polygon 2-4 Record of Information + T2 Guideline.
C17	Flathead PAS Unit 26	Cultural Heritage	Regionally representative of oil exploration and international relations themes and contains regionally significant Flathead customs site.		Best P.A.S. Report. Identification, Evaluation and Ranking of Areas within the Kootenay Region that meet the Protected Areas Strategy Goals and Criteria. Prepared by Conservation, Recreation and Cultureal Heritage Subgroups of the Kootenay Regional Protected Areas Team (RPAT). November, 1993. Unit 26.
C17	CORE polygon 1-3, 2-4	Cultural Heritage		T2 Guideline: **Planning:** Public notification and/or review required within development planning process. In the case of highly sensitive or valued sites, extensive public review likely. Mitigation of impacts, protection of resources, and/or recovery of cultural heritage resource before development, may be required. **Access:** Based on local agreements. Guidelines regarding modes/routes of access and levels of use may be required in case of highly sensitive or valued sites. Fencing may be required. Directional signage may be restricted or not allowed. Some buffering from access routes to minimize vandalism. Sensitive sites to be well buffered. Roads to avoid contextual areas. **Facilities:** Restrictions on construction of facilities within contextual areas. In	CORE 1994 East Kootenay Land Use Plan, Polygon 1-3, 2-4 Records of Information + T1 Guideline.

LU #	Drainage (if applicable)	Topic	Key resource values	Management direction (existing or recommended)	Reference (Source) *(Document, date, section and/or pages)*
				sensitive areas, no development permitted. Temporary site protection may be required. Preservation and reuse of related heritage sites may be permitted under controlled conditions. **Activities** High control level on use of fire and chemicals to protect cultural heritage sites. Activities and party size may be restricted. Establishment of a cultural heritage impact assessment process, including recognized cultural heritage advisors. Development plans to be referred to Community Heritage Commission (or equivalent).	
C17	CORE polygon 2-3	Cultural Heritage		T1 Guideline: **Planning:** ID cultural heritage resource (see FPC); Development without preparation of cultural heritage impact assessment. **Access:** restrictions unlikely. Directional signage to cultural/heritage sites permitted. Signage re: visitor behaviour and to ID site as significiant cultural/heritage feature desired. Land trades possible to create access across private lands. **Facilities:** Major construction permitted at cultural heritage resource sites. Buffering not required. Adaptive reuse of appropriate heritage structures without restriction. **Activities:** restrictions unlikely. Resource extraction or harvesting unlikely to be restricted for cultural heritage values. Environmental protection opportunities for special exemption from mining reclamation.	CORE 1994 East Kootenay Land Use Plan. Polygon 2-3 Record of Information + T1 Guideline.
C17	Flathead River drainage	Biodiversity – Rare and Endangered Species	Mottled Sculpin – Blue listed (vulnerable) Habitat: a wide range of stream sizes with cool and clear water. Distribution: Flathead River drainage. It is suggested that the population found in the Flathead River would be the only true population of Mottled Sculpin in B.C.		Listed Vertebrate and Vascular Plant Species Occurring in the Cranbrook Forest District and in the Southern Rocky Mountain Management Plan Area. March, 2002. Page 2.
C17	West	Biodiversity –	Tailed Frog – Red list (threatened or endangered)		Listed Vertebrate and Vascular

LU #	**Drainage** (if applicable)	**Topic**	**Key resource values**	**Management direction** (existing or recommended)	**Reference (Source)** *(Document, date, section and/or pages)*
	Flathead River	Rare and Endangered Species	Habitat: fast, small, permanent forest streams with clear, cold water (ESSF). Distribution: west Flathead River drainage.		Plant Species Occurring in the Cranbrook Forest District and in the Southern Rocky Mountain Management Plan Area. March, 2002. Page 3.
C17		Biodiversity – Rare and Endangered Species	Fisher - Blue listed (vulnerable) Habitat: dense, late seral coniferous or mixed wood. Distribution: may currently occupy the southeast corner of B.C. in low densities, and at high elevation. Historical range includes the west and southeast portions of the Cranbrook Forest District.		Listed Vertebrate and Vascular Plant Species Occurring in the Cranbrook Forest District and in the Southern Rocky Mountain Management Plan Area. March, 2002. Page 11.
C17		Biodiversity – Rare and Endangered Species	Badger (Taxidea taxus) - Red listed (threatened or endangered) Habitat: non-forest and open Douglas-fir. Distribution: occur in the southern half of the Cranbrook Forest District, in the Kootenay River Drainage and in the Elk Valley.		Listed Vertebrate and Vascular Plant Species Occurring in the Cranbrook Forest District and in the Southern Rocky Mountain Management Plan Area. March, 2002. Page 12.
C17		Biodiversity Emphasis	MSdk- Medium Biodiversity Emphasis. All other biogeoclimatic subzones- High Biodiversity Emphasis.		KBLUP IS: Chapter 3.2, Page 3-6; Appendix 3 - Appendix C
C17	RMZ C-I04	Biodiversity - General	1. Retain forest and rangeland ecological elements and processes at a moderate risk. 2. Retain attributes for old growth dependent species and fur bearers. 3. Ensure habitat requirements for red and blue listed species are achieved.	**3.1 Tailed Frog should be designated as an identified wildlife species under the FPC.**	KBLUP IS: Appendix 3, Page 22
C17	CORE polygon 2-3	Biodiversity - General	Designated land use: Integrated.	T1 Guideline: Interior Fish-Forestry Guidelines / Riparian and Streamside Management Guidelines / Wildlife Tree Guidelines / Specific plans for red/blue listed species management	CORE 1994 East Kootenay Land Use Plan, Polygon 2-3 Record of Information + T1 Guideline.
C17		Biodiversity – Connectivity	All or a portion of LU is important for regional connectivity.		KBLUP IS: Chapter 3.3, Page 6-8
C17	F120, F185, F190	Biodiversity-Connectivity	North-south connectivity is important.	**Maintain regional connectivity to ensure the north-south connection between the Elk Valley and the United States.**	KBLUP IS: Appendix 3, Page 9

LU #	Drainage (if applicable)	Topic	Key resource values	Management direction (existing or recommended)	Reference (Source) *(Document, date, section and/or pages)*
		Species	Rocky Mountain Red Tailed Frog, Least Chipmunk, Southern Red Backed Vole and the Tailed Frog	**Designate Rocky Mountain Red Tailed Frog, Least Chipmunk, Southern Red Backed Vole and the Tailed Frog as identified wildlife under the FPC.**	
C17	CORE polygon 1-3, 2-4- Upper Flathead Basin and River Corridor	Biodiversity - General	1. Land use designation: Polygon 1-3: Special Management; Polygon 2-4: Not agreed on: proposed Protected/Special/Integrated/Dedicated 2. Part of the Border Ranges Ecosection. 3. 2-4 is the only low elevation area in the drainage that is unroaded. 3. Flathead river valley and riparian zone running north-south. No permanent human occupation. A major movement corridor for carnivores and supports a large grizzly population. Bull trout and wolf populations are management concerns. -Priority area for Total Resource Plan -Priority for gov't to give immediate consideration to wide ranging carnivores, ungulate winter range, fisheries and general biodiversity.	T2 Guideline: -Enhanced FENs; riparian protection, wide corridors; significant OG protection; -Landscape habitat mosaic is diverse in stand, age classes, types, structures and composition. -Rare and unique habitats and species protected. -Providing habitat for regional inter-protected area linkage corridors and buffers is a part of management objectives for area. -Minimize expansion of settlement or industrial/commercial use -Restoration/rehabilitation of disturbed sites	CORE 1994 East Kootenay Land Use Plan, Polygon 1-3, 2-4 Records of Information + T2 Guideline.
C17	CORE polygon 1-3, 2-4	Biodiversity-Old Growth	Polygon 2-4 has remnant stands and very high multi-sector values.	T1 Guideline: FENs / Interior Fish-Forestry-Wildlife Guidelines / Regional Wildlife Habitat Guidelines	CORE 1994 East Kootenay Land Use Plan, Polygon 1-3, 2-4 Records of Information + T1 Guideline.
C17	CORE polygon 2-3	Biodiversity-Old Growth		T2 Guideline: Significant retention of old growth across the landscape. FEN's with major old growth component. Corridors and riparian dominantly old growth. Wide corridors	CORE 1994 East Kootenay Land Use Plan, Polygon 2-3 Record of Information + T2 Guideline.
C17	CORE polygon 1-3, 2-3, 2-4	Biodiversity – Natural grasslands	Limited to small areas of NDT5-alpine tundra and subalpine parkland	T1 Guideline: Weed control / Maintenance of riparian habitats / Grazing management guidelines/ Off-road vehicle control / Monitoring of range condition and trend in terms of domestic and wildlife grazers	CORE 1994 East Kootenay Land Use Plan, Polygon 1-3, 2-3, 2-4 Records of Information, T1 Guideline + Natural Disturbance Type mapping.
C17	RMZ C-I04	Ungulates	1. Maintain abundance of elk, mule deer, Rocky Mountain Goats and Rocky Mountain Big Horn Sheep by maintaining foraging opportunities for wildlife	1.1 No domestic livestock tenures to be issued within the unit.	KBLUP IS: Appendix 3, Page 22

LU #	Drainage (if applicable)	Topic	Key resource values	Management direction (existing or recommended)	Reference (Source) *(Document, date, section and/or pages)*
			2. Mineral lick in McLatchie Creek.	**2.1 Mineral lick in McLatchie Creek should be designated as a sensitive area under the FPC.**	
C17	F120, F185, F190	Ungulates	1. Maintain abundance of mule deer, white tailed deer, elk and moose.	1.1 No domestic livestock tenures to be issued within the unit.	KBLUP IS: Appendix 3, Page 9
C17	F120, F135, F170, F185	Ungulates	Ungulate winter ranges (XE)		KBLUP IS: Chapter 3.5, Page 17-24
C17	CORE polygon 1-3	Ungulates	Flathead river corridor is an important ungulate winter range.	T2 Guideline applies to ungulate winter range throughout the unit: -Manage for optimal mix of thermal cover, snow interception and browse production (habitat adjacency key). -Approximate mix of silvicultural systems and treatments to maintain habitats.	CORE 1994 East Kootenay Land Use Plan, Polygon 1-3 Record of Information, T2 Guideline.
C17	CORE polygon 2-3, 2-4	Ungulates		T1 Guideline applies to ungulate winter range throughout the unit: Wildlife harvesting guidelines; TSA harvesting guidelines; Specific referrals on the ground.	CORE 1994 East Kootenay Land Use Plan, Polygon 2-3, 2-4 Record of Information, T1 Guideline.
C17	F120, F185, F190	Wide ranging carnivores	1. Maintain regionally significant grizzly bear habitat and grizzly bear population. 2. Maintain regionally significant wolf populations.	1.1 Maintain high productivity berry patches using controlled fire. Herbicides are not to be used in high productivity berry patch areas	KBLUP IS: Appendix 3, Page 10
C17		Wide ranging carnivores	Priority 1 (and some Priority 2) Grizzly Bear Habitat		KBLUP IS: Chapter 3.4, Page 8-17
C17	CORE polygon 2-3	Wide ranging carnivores	Important wildlife values	T1Guideline: Interior fish-forestry guidelines / FENs / Access control / Landfill regulations / Management of prey species / Maintenance of seasonal feeding and breeding areas / Harvesting regulations	CORE 1994 East Kootenay Land Use Plan, Polygon 2-3 Record of Information, T1 Guideline.
C17	CORE polygon 1-3, 2-4	Wide ranging carnivores	Polygon 1-3: Major movement corridor for carnivores. Supports internationally significant grizzly and wolf populations* *see Global/Ecosystem Sectors description of polygon 1-3 values in black binder under CORE tab.	T2 Guideline: -Seasonal feeding and breeding habitats protected; -Conservation of seasonal feeding and breeding areas; silvicultural treatments to favour food production; -Road densities minimal and access management coordinated to avoid conflicts with habitat use. -Minimal human habitation and no sanitary landfills. -Predator control only under special circumstances. -Special grazing management to protect carnivore values.	CORE 1994 East Kootenay Land Use Plan, Polygon 1-3; 2-4 Records of Information, T2 Guideline.
C17		Wide ranging carnivores	Value: Unique community of carnivore species resides in the transboundary Flathead that appears unmatched in North America for its variety,	- All of the carnivore species cross over the international border, making it critical that the Flathead River Basin be managed as one integral, ecological unit.	J.Weaver, The Transboundary Flathead, British Columbia and Montana: A Critical Landscape for

LU #	Drainage (if applicable)	Topic	Key resource values	Management direction (existing or recommended)	Reference (Source) *(Document, date, section and/or pages)*
			completeness, use of valley bottom lands, and density of species which are rare elsewhere.	• Implement the carnivore conservation principles.	Carnivores in the Rocky Mountains. 2001, p36.
C17		Wide ranging carnivores	Value: habitat and prey population management. Carnivore conservation principle (1): maintain food resources with management of habitat and prey populations.	• Maintain the shelter and forage value of mature and old-growth conifers along the Flathead River for ungulates in winter. • Manage for higher levels of ungulate populations over time by setting conservative quotas for ungulate harvest, especially after harsh winters. • Maintain foraging opportunities for bears in riparian sites, avalanche chutes and burned areas by providing adequate cover and security. • Maintain productive habitat of dense (>5000 stems/ha), young lodgepole pine and spruce for snowshoe hare and lynx by delaying thinning or leaving un-thinned patches across the cutting unit. • Retain remaining stands of old-growth spruce in the commercial forests of the transboundary Flathead as important habitat for martens. Montana's Flathead National Forest Plan specifies retention of all remaining old-growth stands (Amendment 21). British Coumbia should establish similar direction for remnant stands of old-growth spruce.	J.Weaver, The Transboundary Flathead, British Columbia and Montana: A Critical Landscape for Carnivores in the Rocky Mountains. 2001, p39-40.
C17		Wide ranging carnivores	Value: security. Carnivore conservation principle (2): provide security from excessive mortality with networks of core reserves and other precautionary measures.	• Provide a network of seasonal or permanent security zones throughout the transboundary Flathead basin and elsewhere in the new 'Southern Rocky Mountain Conservation Area'. Consideration of focal species' key habitats will be used to guide the strategic identification and delineation of security zones.	J.Weaver, The Transboundary Flathead, British Columbia and Montana: A Critical Landscape for Carnivores in the Rocky Mountains. 2001, p45.
C17	RMZ C-S05 Planning cells F120, F185, F190	Fisheries	Maintain wild fish stocks and habitat for spawning, rearing and over wintering of Bull Trout. Rebuild wild fish stocks and habitats.	Principle tributaries should be priority areas for WRP assessments/projects.	KBLUP IS: Appendix 3, Page 10
C17	CORE polygons 1-3, 2-4	Fisheries	Polygon 1-3: Bull Trout in Flathead River Polygon 2-4: Important fisheries values especially potential spawning for Bull Trout.	T2 Guideline: -Minimal human-caused sedimentation. -Protection of streamside and riparian habitats; no roads in riparian without special permission, however, stream crossing normally acceptable. -Management for large organic debris.	CORE 1994 East Kootenay Land Use Plan. Polygon 1-3, 2-4(a) Records of Information, T2 Guideline

LU #	**Drainage** (if applicable)	**Topic**	**Key resource values**	**Management direction** (existing or recommended)	**Reference (Source)** *(Document, date, section and/or pages)*
				-Watershed sensitivity and ECA analysis prior to development. -Protection of spawning and rearing habitat. -Reclamation and hydrologic stabilization where necessary. -Assume level one guidelines in place where level two's are applied.	
C17	CORE polygon 2-3	Fisheries		T1 Guideline: Interior Fish-Forestry Guidelines / Riparian and Streamside Management Guidelines / Maintenance of spawning and rearing habitat	CORE 1994 East Kootenay Land Use Plan, Polygon 2-3 Record of Information, T1 Guideline.
C17	CORE polygon 1-1	Coal Mining	Medium and high value coal lands are located throughout LU C17 except along the west slopes of the Continental Divide. 1. Flathead coalfield • The high value lands (exposed coal bearing strata) of the Flathead coalfield are four widely dispersed blocks. Lillyburt area* (1,090 ha) (p7), in the vicinity of Flathead townsite, is located in LU C17. Harvey Creek area is located on the boundary of LU C16, C17 and C18. Sage Creek area and Cabin Creek area are in LU C16. 2. Crowsnest coalfield • The high value lands of the Fernie block lay along the west half of LU C17, and extend north through C19, C24 and C38. The Fernie block high value lands area is 73,333 ha (p7), which is mainly on private land. • The high value lands of Corbin area (962 ha) and Tent Mountain area (1,603 ha) (p7) are located in LU C19.	Definitions: • High value coal lands include the area from the outcrop of the coal bearing strata to its inferred depth limit (p1). • Medium value coal land is a corridor for mining related activities and infrastructure, surrounding the exposed coal bearing strata (high value coal lands) (p1). *Note: The Lillyburt area may be on Shell private land which would explain why it was not identified as high value for coal in KBLUP or CORE.	Morris, Bob. Resource Estimate: East Kootenay Coalfields, 1994. Pages 1, 4, 7; Fig. 5: E.K. Coal Fields Location Map; and Fig. 7: Coal Value Lands Map. Refer to Black Binder, Coal tab for maps.
C17	CORE polygons 1-3, 2-3, 2-4	Mining	Polygon 2-3: Integrated. Corbin (Byron Ck) coal mine in LU 19 is mostly on private land. Coal subcrop and associated infrastructure and transportation corridor located on Crown land to be designated as Dedicated. Coal leases on south slope of Tent Mtn and infrastructure and transportation corridor to be designated Dedicated.	T1 Guideline: Mines Act / Health, Safety and Reclamation Code / Mineral Tenure Act / Mine Development Assessment Act / Water Act / Fisheries Act / Forest Act / Guidelines for Mineral Exploration / Guidelines for Coal Exploration / Petroleum and Natural Gas Act / Geothermal Resources Act / other related regulations and guidelines	CORE 1994 East Kootenay Land Use Plan, Polygon 1-3, 2-3, 2-4 Records of Information + T1 Guideline.

LU #	**Drainage** (if applicable)	**Topic**	**Key resource values**	**Management direction** (existing or recommended)	**Reference (Source)** *(Document, date, section and/or pages)*
C17	CORE polygons 1-3, 2-3, 2-4	Oil & Gas	1-3 Special Management: Recognize high value of oil and gas		CORE 1994 East Kootenay Land Use Plan, Polygon 1-3 Record of Information
C17	CORE polygon 1-3, 2-3, 2-4	Unacceptable Uses	Settlement and General Industrial/Commercial Uses are not acceptable uses.		CORE 1994 East Kootenay Land Use Plan, Polygon 1-3, 2-3, 2-4 Records of Information.
C17	Flathead townsite	Private	Flathead townsite is private and should be distinguished as private on the SRMMP map.		Commercial Hunting & Fishing Focus Group session, March 27, 2002
C17	CORE polygon 2-2, 2-5	Private/Federal lands	Shell-Elkview-Dominion block A major block of private land. The north portion (Wheeler area) belongs to Elkview Mining; the south and east portions belong to Shell Canada. The unit includes two "Dominion" blocks owned by the federal Crown.	Recommend multi-stakeholder discussion on biodiversity issues relating to large blocks of private land.	CORE 1994 East Kootenay Land Use Plan, Polygon 2-2, 2-5 Records of Information.
C18	Akamina Kishinena Recreation Area PAS Unit 1	1993 Best PAS Areas	Diversity: In conjunction with the two adjacent existing protected areas, there is high diversity for grizzly bear, wolves and bull trout. Viability: This unit is viable due to its adjacency to Glacier National Park and Waterton National Park. Area: 10,915.0 ha	1993 recommended Priority One area for protection	Best P.A.S. Report. Identification, Evaluation and Ranking of Areas within the Kootenay Region that meet the Protected Areas Strategy Goals and Criteria. Prepared by Conservation, Recreation and Cultural Heritage Subgroups of the Kootenay Regional Protected Areas Team (RPAT). November, 1993. Unit 1.
C18	CORE polygon 1-6	Akamina Kishinena protected area	PAS Unit 1 –additional information from CORE Features: Several rare species found only here in the province of B.C. Existing values/activities: 1. Good timber values. The lower drainage has been developed and one pass completed. 2. Several mining claims in the lower portion of the drainage. 3. High oil/gas potential.	Designation - Protected	CORE 1994 East Kootenay Land Use Plan, Polygon 1-6 Record of Information

LU #	**Drainage** (if applicable)	**Topic**	**Key resource values**	**Management direction** (existing or recommended)	**Reference (Source)** *(Document, date, section and/or pages)*
			4. Important area for guide outfitter. 5. Important recreational, historic, cultural, and native traditional values in the area.		
C18	CORE polygon 1-6(a)	Akamina Kishinena bottomlands	Note: Polygon 1-6(a) is the Akamina bottomlands north of present day Akamina Kishinena Provincial Park. CORE did not develop a Record of Information for polygon 1-6(a); the polygon exists on the map only.		
C18	Sage Creek PAS Unit 23	1993 Best PAS Areas	PAS Value: Sage Creek is an enhancement to Akamina Creek and the Flathead River. It is internationally significant for wolves, grizzly bear and bull trout, and connects Waterton National Park to Glacier National Park via the Flathead River. Diversity: Provides productive riparian areas along the floodplain of Sage Creek, including old growth. Internationally significant for shared bull trout, grizzly bear and wolf populations with Montana. Also supports black bear, moose, elk, white tailed deer and cougar in a complex predator/prey relationship. The area is important internationally as a major tributary to the North Fork of the Flathead River (designated as a Wild and Scenic River in Montana). It connects to Glacier National Park and the Akamina Kishinena unit. Viability: This unit is viable due to its size (34,914 ha), watershed completeness, and connection to Glacier National Park. Naturalness in 1993: Less than 25% disturbed by roads and logging.	1993 recommended Priority Two area for protection.	Best P.A.S. Report. Identification, Evaluation and Ranking of Areas within the Kootenay Region that meet the Protected Areas Strategy Goals and Criteria. Prepared by Conservation, Recreation and Cultural Heritage Subgroups of the Kootenay Regional Protected Areas Team (RPAT). November, 1993. Unit 23.
C18	Flathead PAS Unit 26	1993 Best PAS Areas	Area encompasses the drainage of the Flathead River north of the Canada/USA border, excluding the	1993 recommended Priority Two area for protection.	Best P.A.S. Report. Identification, Evaluation and Ranking of Areas

LU #	Drainage (if applicable)	Topic	Key resource values	Management direction (existing or recommended)	Reference (Source) *(Document, date, section and/or pages)*
			Howell and Cabin Creek drainages. PAS Value: This area is internationally significant for shared bull trout, grizzly bear and wolf populations with Montana. It includes the largest contiguous stand of old growth lodgepole pine and is internationally important as the Canadian extension of the Flathead River (a designated "Wild and Scenic River" in Montana). Diversity: Provides productive riparian areas along the wide floodplain of the Flathead River, including the largest contiguous stands of old growth lodgepole pine. Supports black bear, moose, elk, white tailed deer and cougar in a complex predator/prey relationship. Connects to Glacier National Park. Viability: This unit is of sufficient size (56,134 ha), and watershed completeness to be viable, particularly in connection to Glacier National Park. Naturalness in 1993: Less than 25% disturbed by roads, logging and oil and gas development		within the Kootenay Region that meet the Protected Areas Strategy Goals and Criteria. Prepared by Conservation, Recreation and Cultural Heritage Subgroups of the Kootenay Regional Protected Areas Team (RPAT). November, 1993. Unit 26.
C18	RMZ C-S05, C-I03	Agriculture	Grazing	Maintain foraging opportunities for wildlife with no domestic livestock tenures allocated within the unit	KBLUP IS: Appendix 3, Page 10 and Page 21
C18	C18, C19	Agriculture	Low range value. One grazing permit for guide outfitter horses for 58 AUMs in C18 + C19	No grazing permitted except for guide outfitter horses	Cranbrook Forest District Recreation Access Plan (DRAP), March, 2000. LU C18 +C19
C18	Flathead Range Unit	Agriculture	Flathead Range Agreement Holders: GT David Eider - 73 AUMs GT: Harry Leuenberger - 54 AUMs	GT indicates that the Range Agreement Area matches the G/O territory. Flathead Range Unit includes LU C16, C17 and C18	Cranbrook Forest District Range Unit Map and Range Agreement Holder information (refer to Range tab in black binder)
C18	CORE polygons 1-3, 1-4	Agriculture	Grazing	Potential for increased agricultural activity. Intent is to pursue the possibility (CORE, East Kootenay Regional Table, Volume 3, Part B Management Guidelines, Agriculture Notes, AG2)	CORE 1994 East Kootenay Land Use Plan, Polygon 1-3, 1-4 Records of Information

LU #	**Drainage** (if applicable)	**Topic**	**Key resource values**	**Management direction** (existing or recommended)	**Reference (Source)** *(Document, date, section and/or pages)*
				Ecosystems Sector concerned re: grazing because of internationally significant bear and wolf populations. Any expansion may result in negative impacts on carnivores and ungulates. Outdoor Recreation Non-Motorized Sector concerned re: expansion of cattle grazing in this unit, however whole heartedly supports CRMPs and the work of the EK Trench Agriculture/ Wildlife Committee. (Refer to Sector Comments with Record of Information). T1 Guideline-Grazing tenures	
C18		Access Management	Critical wildlife habitat and roads.	Motorized access should be reduced.	Commercial Hunting & Fishing Focus Group session, March 27, 2002.
C18	RMZ C-S05	Recreation	Maintain range of recreation opportunities from roaded resource land to semi-primitive non-motorized.	1. Motorized use restrictions may be required to maintain semi-primitive character. 2. Manage the Flathead river as a Backcountry River Corridor consistent with the Backcountry Recreation Guidelines (Table 1.2). Apply for non-motorized use restriction through Transport Canada.	KBLUP IS: Appendix 3, Page 9 and Chapter 3.9, Page 54-57
C18	CORE polygon 1-3	Recreation-Commercial Tourism	-Area is used by two to three guide/outfitters. Very important area for grizzly bear, wolf, white tail deer, moose and elk. Ungulate winter range. -River: supports Bull trout; is used for rafting; and is a 'wild and scenic' river on US side of border, and is the major source of water for Flathead Lake.	T1 Guideline: -maintain traditional use access; -consultation and consensus on access issues (mining referrals would not normally be routed through tourism unless there was a substantial wilderness impact); -consultation on potential alternatives through resource extraction	CORE 1994 East Kootenay Land Use Plan, Polygon 1-3 Record of Information + T1 Guideline.
C18	CORE polygon 1-4	Recreation-Commercial Tourism	-Part of guide/outfitter area. High wildlife values throughout. -Most drainages are roaded, no settlement or private land. -Area to east in Alberta (West Castle) has been proposed as a wildlands recreation area associated with a potential expansion of the West Castle ski area.	T1 Guideline: -maintain traditional use access; -consultation and consensus on access issues (mining referrals would not normally be routed through tourism unless there was a substantial wilderness impact); -consultation on potential alternatives through resource extraction	CORE 1994 East Kootenay Land Use Plan, Polygon 1-4 Record of Information + T1 Guideline.
C18	CORE polygons 1-3,	Recreation – Visuals		T1 Guideline: Tourism-Management of high tourism value viewscapes for some	CORE 1994 East Kootenay Land Use Plan, Polygon 1-3, 1-4

LU #	**Drainage** (if applicable)	**Topic**	**Key resource values**	**Management direction** (existing or recommended)	**Reference (Source)** *(Document, date, section and/or pages)*
	1-4			enhanced analysis and landscape design (implying no change in timber volume) General-Smoke management guidelines; -Visual Quality Objectives guidelines apply (implying restrictions on timber volume)	Records of Information + T1 Guideline.
C18	CORE polygon 1-3	Recreation-Sense of Solitude	Sense of Solitude	T1 Guideline: -Local agreement preferred -Full range of mechanized and non-mechanized access/activities can be allowed	CORE 1994 East Kootenay Land Use Plan, Polygon 1-3 Record of Information + T1 Guideline
C18	CORE polygon 1-4	Recreation-Sense of Solitude	Sense of solitude	T2 Guideline: -Local agreement preferred. -Sensitivity to Solitude experiences. -Enhanced management related to timing, seasonality, mode and distribution of mechanized access/activities, recognize existing and potential future use for tenure holders and consider mechanized recreational users.	CORE 1994 East Kootenay Land Use Plan, Polygon 1-4 Record of Information + T2 Guideline
C18	Sage Creek PAS Unit 23	Cultural Heritage	Regionally representative of resource extraction themes: oil, gas, mineral exploration and timber harvesting. Contains nationally significant early oil drilling site and provincially significant post-1945 mineral extraction and processing site.		Best P.A.S. Report. Identification, Evaluation and Ranking of Areas within the Kootenay Region that meet the Protected Areas Strategy Goals and Criteria. Prepared by Conservation, Recreation and Cultural Heritage Subgroups of the Kootenay Regional Protected Areas Team (RPAT). November, 1993. Unit 23.
C18	Flathead PAS Unit 26	Cultural Heritage	Regionally representative of oil exploration and international relations themes and contains regionally significant Flathead customs site.		Best P.A.S. Report. Identification, Evaluation and Ranking of Areas within the Kootenay Region that meet the Protected Areas Strategy Goals and Criteria. Prepared by Conservation, Recreation and Cultural Heritage Subgroups of the Kootenay Regional Protected Areas Team (RPAT). November, 1993. Unit 26.
C18	CORE	Cultural		T2 Guideline:	CORE 1994 East Kootenay Land

LU #	**Drainage** (if applicable)	**Topic**	**Key resource values**	**Management direction** (existing or recommended)	**Reference (Source)** *(Document, date, section and/or pages)*
	polygon 1-3, 1-4	Heritage		**Planning:** Public notification and/or review required within development planning process. In the case of highly sensitive or valued sites, extensive public review likely. Mitigation of impacts, protection of resources, and/or recovery of cultural heritage resource before development, may be required. **Access:** Based on local agreements. Guidelines regarding modes/routes of access and levels of use may be required in case of highly sensitive or valued sites. Fencing may be required. Directional signage may be restricted or not allowed. Some buffering from access routes to minimize vandalism. Sensitive sites to be well buffered. Roads to avoid contextual areas. **Facilities:** Restrictions on construction of facilities within contextual areas. In sensitive areas, no development permitted. Temporary site protection may be required. Preservation and reuse of related heritage sites may be permitted under controlled conditions. **Activities** High control level on use of fire and chemicals to protect cultural heritage sites. Activities and party size may be restricted. Establishment of a cultural heritage impact assessment process, including recognized cultural heritage advisors. Development plans to be referred to Community Heritage Commission (or equivalent)	Use Plan, Polygon 1-3, 1-4 Records of Information + T2 Guideline.
C18	F255	Watershed	Class 2 domestic watershed		KBLUP IS: Chapter 3.7, Pages 30-52
C18	Flathead River drainage	Biodiversity – Rare and Endangered Species	Mottled Sculpin – Blue listed (vulnerable) Habitat: a wide range of stream sizes with cool and clear water. They are also found in montane lakes with, in some cases, warmer water as high as 20 degrees celsius. Distribution: Flathead River drainage. It is suggested that the population found in the Flathead River would be the only true population of Mottled Sculpin in B.C.		Listed Vertebrate and Vascular Plant Species Occurring in the Cranbrook Forest District and in the Southern Rocky Mountain Management Plan Area. March, 2002. Page 2.

LU #	**Drainage** (if applicable)	**Topic**	**Key resource values**	**Management direction** (existing or recommended)	**Reference (Source)** *(Document, date, section and/or pages)*
C18	Akamina Pass	Biodiversity – Rare and Endangered Species	Least Chipmunk- – Blue listed (vulnerable) Habitat: Alpine and sub alpine. Distribution: Akamina Pass and Elkford area.		Listed Vertebrate and Vascular Plant Species Occurring in the Cranbrook Forest District and in the Southern Rocky Mountain Management Plan Area. March, 2002. Page 10.
C18	Continental Divide area from U.S. border to Tombstone Mountain	Biodiversity – Rare and Endangered Species	Red Tailed Chipmunk - Red listed (threatened or endangered) Habitat: Coniferous forests near openings where shrubs are abundant. Distribution**: known only from the southeast corner of the Cranbrook Forest District.**		Listed Vertebrate and Vascular Plant Species Occurring in the Cranbrook Forest District and in the Southern Rocky Mountain Management Plan Area. March, 2002. Page 10.
C18		Biodiversity – Rare and Endangered Species	Southern Red Backed Vole - Blue listed (vulnerable) Habitat: Cool, moist, older forests. Distribution: In B.C. recorded only from the southeast corner of Cranbrook Forest District.		Listed Vertebrate and Vascular Plant Species Occurring in the Cranbrook Forest District and in the Southern Rocky Mountain Management Plan Area. March, 2002. Page 11.
C18		Biodiversity – Rare and Endangered Species	Fisher - Blue listed (vulnerable) Habitat: dense, late seral coniferous or mixed wood Distribution: may currently occupy the southeast corner of B.C. in low densities, and at high elevation. Historical range includes the west and southeast portions of the Cranbrook Forest District.		Listed Vertebrate and Vascular Plant Species Occurring in the Cranbrook Forest District and in the Southern Rocky Mountain Management Plan Area. March, 2002. Page 11.
C18		Biodiversity – Rare and Endangered Species	Badger (Taxidea taxus) - Red listed (threatened or endangered) Habitat: non-forest and open Douglas-fir Distribution: occur in the southern half of the Cranbrook Forest District, in the Kootenay River Drainage and in the Elk Valley.		Listed Vertebrate and Vascular Plant Species Occurring in the Cranbrook Forest District and in the Southern Rocky Mountain Management Plan Area. March, 2002. Page 12.
C18		Biodiversity – Rare and Endangered Species	Large-flowered Brickellia- Red listed (threatened or endangered) Habitat: Eroded slopes and rocky banks. Montane Distribution: Rare in S.E. B.C. Known only from Flathead Valley.		Listed Vertebrate and Vascular Plant Species Occurring in the Cranbrook Forest District and in the Southern Rocky Mountain Management Plan Area. March, 2002. Page 17.

LU #	Drainage (if applicable)	Topic	Key resource values	Management direction (existing or recommended)	Reference (Source) *(Document, date, section and/or pages)*
C18		Biodiversity – Rare and Endangered Species	Least Bladder Milk-vetch- Red listed (threatened or endangered) Habitat: Dry sites in steppe vegetation and lower montane zones. Distribution: Known only from a few collections in extreme S.E. B.C. Some U.S. occurrence.		Listed Vertebrate and Vascular Plant Species Occurring in the Cranbrook Forest District and in the Southern Rocky Mountain Management Plan Area. March, 2002. Page 17.
C18		Biodiversity – Rare and Endangered Species	Howell's Quillwort- Red listed (threatened or endangered) Habitat: Submerged aquatic plant growing in clear nutrient poor lakes and ponds. Distribution: Limited in S.E. B.C. near Waterton Park.		Listed Vertebrate and Vascular Plant Species Occurring in the Cranbrook Forest District and in the Southern Rocky Mountain Management Plan Area. March, 2002. Page 21
C18	RMZ C-S05	Biodiversity - General	1. Maintain regional connectivity corridor to ensure the north-south connection between the Elk valley into the U.S. to contribute to ecosystem representation (BRR-MSdk), to serve as habitat linkage for the seasonal migration of grizzly bears, wolves, ungulates and rare and endangered species and to support the Akamina-Kishinena Provincial Park. 2. Ensure habitat requirements for red and blue listed and regionally significant species are achieved.	1.1 Apply the connectivity guidelines within the regional connectivity corridor as indicated in Ch. 3.3. 2.1 Designate Rocky Mountain red tailde frog, least chipmunk, southern red backed vole and the tailed frog as identified wildlife under the FPC. **2.2 The rare plant communities in the Proctor Lake area should be designated as a Sensitive Area under the FPC.**	KBLUP IS: Appendix 3, Page 9
C18	CORE polygon 1-3	Biodiversity - General	-Land use designation: Special Management. -Part of the Border Ranges and Crown of the Continent Ecosections. -Flathead river valley and riparian zone running north-south. No permanent human occupation. A major movement corridor for carnivores and supports a large grizzly population. Bull trout and wolf populations are management concerns. -Priority area for Total Resource Plan. -Priority for gov't to give immediate consideration to wide ranging carnivores, ungulate winter range,	T2 Guideline: -Enhanced FENs; riparian protection; wide corridors; significant OG protection; -Landscape habitat mosaic is diverse in stand, age classes, types, structures and composition. -Rare and unique habitats and species protected. -Providing habitat for regional inter-protected area linkage corridors and buffers is a part of management objectives for area. -Minimize expansion of settlement or industrial/commercial use. -Restoration/rehabilitation of disturbed sites	CORE 1994 East Kootenay Land Use Plan, Polygon 1-3 Record of Information + T2 Guideline

LU #	**Drainage** (if applicable)	**Topic**	**Key resource values**	**Management direction** (existing or recommended)	**Reference (Source)** *(Document, date, section and/or pages)*
			fisheries and general biodiversity.		
C18	RMZ C-I03	Biodiversity - General	1. Maintain regional **connectivity corridor along the continental divide and between the Flathead watershed and Waterton and Glacier National Parks** to contribute to ecosystem representation (Brr-MSdk). 2. Maintain integrity of alpine environments.	1.1 Apply the connectivity guidelines within the regional connectivity corridor as indicated in Ch. 3.3 2.1 Address alpine habitat through access management, as required, in conformance with the Access Management Guidelines,- Ch. 3.12	KBLUP IS: Appendix 3, Page 21
C18	CORE polygon 1-4	Biodiversity - General	-Land use designation: Integrated. Medium biodiversity emphasis. -Part of the Crown of the Continent Ecosection. -Drainages run down from Continental Divide. -High wildlife values throughout.	T1 Guideline: Interior Fish-Forestry Guidelines / Riparian and Streamside Management Guidelines / Wildlife Tree Guidelines / Specific plans for red/blue listed species management	CORE 1994 East Kootenay Land Use Plan, Polygon 1-4 Record of Information + T1 Guideline.
C18		Biodiversity-Emphasis	Medium Biodiversity Emphasis		KBLUP IS: Ch. 3.2, Page 3-6 Appendix 3 – Appendix C
C18		Biodiversity-Old Growth	All or portion of LU is important for regional connectivity.		KBLUP IS: Ch. 3.3, Page 6-8
C18	No Name Creek	Biodiversity – Old Growth	No Name Creek Old Growth Management Area	**No Name Creek Old Growth Management Area to remain intact until OGMA's for the LU are established. These stands should be a part of the OGMA for the LU.**	MOU between MOF and MOE re: Instructions for Preparation of 1998 FDP's, Page 2
C18	CORE polygon 1-3	Biodiversity – Old Growth		T1 Guideline: FENs / Interior Fish-Forestry-Wildlife Guidelines / Regional Wildlife Habitat Guidelines.	CORE 1994 East Kootenay Land Use Plan, Polygon 1-3 Record of Information + T1 Guideline.
C18	CORE polygon 1-4	Biodiversity-Old Growth	Remnant old growth. Important to manage remaining old growth for thermal cover, snow interception, and fur bearer habitat.	T1 Guideline: FENs / Interior Fish-Forestry-Wildlife Guidelines / Regional Wildlife Habitat Guidelines.	CORE 1994 East Kootenay Land Use Plan, Polygon 1-4 Record of Information + T1 Guideline.
C18	CORE polygon 1-3, 1-4	Biodiversity – Natural grasslands	Limited to small areas of NDT5-alpine tundra and subalpine parkland	T1 Guideline: Weed control / Maintenance of riparian habitats / Grazing management guidelines/ Off-road vehicle control / Monitoring of range condition and trend in terms of domestic and wildlife grazers	CORE 1994 East Kootenay Land Use Plan, Polygon 1-3, 1-4 Records of Information, T1 Guideline + Natural Disturbance Type mapping.
C18	Flathead Range Complex	Ungulates – Elk	Flathead Wildlife Range Complex is elk winter and spring habitat designated for Active Wildlife Management (Category 2).	Wildlife management would be given equal consideration in specific areas. A combination of the following general management and	Elk-Flathead Operational Wildlife Plan. Prepared Jointly by the Planning and Assessment Branch

LU #	Drainage (if applicable)	Topic	Key resource values	Management direction (existing or recommended)	Reference (Source) *(Document, date, section and/or pages)*
			Biophysical Units: • Class 2 – elk, moose, goat winter winter habitat. • Class 3 – all ungulate species winter habitat • Class 3 – all ungulate species summer range This Range Complex is located in LU: C16 and C18; 5 known mineral licks are located in C16 and 4 known licks are located in C18 (refer to Elk-Flathead Operational Wildlife Plan Map and Cross Reference in the LU Summary background information binder).	enhancement techniques would be actively pursued in an interated resource management strategy: -Logging which could benefit/complement wildlife; -Integated silvicultural practices; -Exploration/mining reclamation; -Access planning; -Impact management activities negotiated through the Mine Development Review Process.	and Cranbrook Wildlife Branch, MOE. December, 1987. Page 13, and Appendix 1, Page 1-3.
C18		Ungulates	Ungulate Winter Range (XE, XWE)		KBLUP IS: Chapter 3.5, Pages 17-24
C18	RMZ C-S05	Ungulates	1. Maintain the abundance of mule and white tailed deer, elk and moose within the sustainable carrying capacity of their habitat.	**1.1 The mineral lick at Sage Creek should be designated as a Sensitive Area under the FPC.** 1.2 Maintain suitable summer habitat for mule and white-tailed deer within this unit through application of the biodiversity emphasis under the FPC.	KBLUP IS: Appendix 3, Page 9
C18	CORE polygon 1-3	Ungulates	Very important white tailed deer, elk and moose winter range.	T2 Guideline applies to ungulate winter range throughout LU 16: -Manage for optimal mix of thermal cover, snow interception and browse production (habitat adjacency key). -Approximate mix of silvicultural systems and treatments to maintain habitats.	CORE 1994 East Kootenay Land Use Plan, Polygon 1-3 Record of Information, T2 Guideline.
C18	RMZ C-I03	Ungulates	1. Maintain the abundance of Rocky Mountain Goats, Rocky Mountain Bighorn Sheep, elk, moose and mule deer within the sustainable carrying capacity of their habitat.	1.1 Maintain summer habitat and minimize wildlife displacement and habitat degradation by developing an access management plan to ensure compatible activity and uses in the area in accordance with the Access Mgmt Guidelines (Ch 3.12) 1.2 Maintain forage opportunities for wildlife with no domestic livestock tenure allocated within the unit.	KBLUP IS: Appendix 3, Page 21
C18	CORE polygon 1-4	Ungulates	Notable wildlife concerns in upper Sage Creek.	T1 Guideline -Wildlife harvesting guidelines / TSA harvesting guidelines / specific referrals on the ground.	CORE 1994 East Kootenay Land Use Plan, Polygon 1-4 Record of Information, T1 Guideline.
C18		Wide ranging carnivores	Priority 1 Grizzly Bear Habitat		KBLUP IS: Ch 3.4, Page 8-17
C18	RMZ C-S05	Wide ranging	1. Maintain the regionally significant grizzly bear	1.1 Maintain high productivity berry patches by:	KBLUP IS: Appendix 3, Page 10

LU #	Drainage (if applicable)	Topic	Key resource values	Management direction (existing or recommended)	Reference (Source) *(Document, date, section and/or pages)*
		carnivores	habitat to retain the existing grizzly bear population. 2. Ensure the regionally significant wolf populations are maintained or enhanced.	a) introducing controlled fires b) using no herbicides in high productivity berry patch areas. 1.2 Complete the Flathead River Drainage Grizzly Bear Inventory Project. 2.1 Maintain sufficient prey habitat and, therefore, adequate prey populations. 2.2 Continue co-operative wolf management with the United States government.	
C18	CORE polygon 1-3	Wide ranging carnivores	A major movement corridor for carnivores. Supports internationally significant grizzly and wolf populations* *see Global/Ecosystem Sectors description of polygon 1-3 values in black binder under CORE tab	T2 Guideline: -Seasonal feeding and breeding habitats protected; -Conservation of seasonal feeding and breeding areas; silvicultural treatments to favour food production; -Road densities minimal and access management coordinated to avoid conflicts with habitat use. -Minimal human habitation and no sanitary landfills. -Predator control only under special circumstances. -Special grazing management to protect carnivore values.	CORE 1994 East Kootenay Land Use Plan, Polygon 1-3 Record of Information, T2 Guideline.
C18	CORE polygon 1-4	Wide ranging carnivores	Extremely important Grizzly Bear habitat.	T2 Guideline: -Seasonal feeding and breeding habitats protected; -Conservation of seasonal feeding and breeding areas; silvicultural treatments to favour food production; -Road densities minimal and access management coordinated to avoid conflicts with habitat use. -Minimal human habitation and no sanitary landfills. -Predator control only under special circumstances. -Special grazing management to protect carnivore values.	CORE 1994 East Kootenay Land Use Plan, Polygon 1-4 Record of Information, T2 Guideline.
C18		Wide ranging carnivores	Value: Unique community of carnivore species resides in the transboundary Flathead that appears unmatched in North America for its variety, completeness, use of valley bottom lands, and density of species which are rare elsewhere.	• All of the carnivore species cross over the international border, making it critical that the Flathead River Basin be managed as one integral, ecological unit. • Implement the carnivore conservation principles.	J.Weaver, The Transboundary Flathead, British Columbia and Montana: A Critical Landscape for Carnivores in the Rocky Mountains. 2001, p36.
C18		Wide ranging carnivores	Value: habitat and prey population management. Carnivore conservation principle (1): maintain food resources with management of habitat and prey populations.	• Maintain the shelter and forage value of mature and old-growth conifers along the Flathead River for ungulates in winter. • Manage for higher levels of ungulate populations over time by setting conservative quotas for ungulate harvest, especially after	J.Weaver, The Transboundary Flathead, British Columbia and Montana: A Critical Landscape for Carnivores in the Rocky Mountains. 2001, p39-40.

LU #	Drainage (if applicable)	Topic	Key resource values	Management direction (existing or recommended)	Reference (Source) *(Document, date, section and/or pages)*
				harsh winters. • Maintain foraging opportunities for bears in riparian sites, avalanche chutes and burned areas by providing adequate cover and security. • Maintain productive habitat of dense (>5000 stems/ha), young lodgepole pine and spruce for snowshoe hare and lynx by delaying thinning or leaving un-thinned patches across the cutting unit • Retain remaining stands of old-growth spruce in the commercial forests of the transboundary Flathead as important habitat for martens. Montana's Flathead National Forest Plan specifies retention of all remaining old-growth stands (Amendment 21). British Coumbia should establish similar direction for remnant stands of old-growth spruce.	
C18	All except north of Tombstone Mtn All	Wide ranging carnivores	Value: security. Carnivore conservation principle (2): provide security from excessive mortality with networks of core reserves and other precautionary measures	• Provide a permanent, year-round core reserve for carnivores in the upper Flathead River in British Columbia. Core reserve to extend from the road paralleling the west side of the Flathead River eastward to the Continental Divide and from the international border north to about Tombstone Mountain (north of Middlepass Creek) (Fig. 15, p44). Core reserve would contribute significantly to vital protection provided by the adjoining Waterton Lakes National Park in Alberta and Glacier National Park in Montana. • Provide a network of seasonal or permanent security zones throughout the transboundary Flathead basin and elsewhere in the new 'Southern Rocky Mountain Conservation Area'. Consideration of focal species' key habitats will be used to guide the strategic identification and delineation of security zones (p45)	J.Weaver, The Transboundary Flathead, British Columbia and Montana: A Critical Landscape for Carnivores in the Rocky Mountains. 2001, p42-45
C18	RMZ C-S05	Fisheries	1. Maintain wild fish stocks and habitat for spawning, rearing and overwintering Bull Trout. 2. Rebuild wild fish stocks and habitats for Cutthroat and Bull Trout in the Flathead River.	1.1 In establishing priorities for watershed assessments and for managing Bull Trout through application of the appropriate components of the FPC, consideration should be given to the principal tributaries within the unit. 2.1 Restore fish habitat and identify strategies to offset impacts of resource development. 2.2 Cooperate with Montana on monitoring stock status of Bull	KBLUP IS: Appendix 3. Page 10

LU #	**Drainage** (if applicable)	**Topic**	**Key resource values**	**Management direction** (existing or recommended)	**Reference (Source)** *(Document, date, section and/or pages)*
				Trout. 2.3 Assess current status of fish populations and fish habitat. 2.4 Review current management strategies.	
C18	CORE polygon 1-3, 1-4	Fisheries	Flathead river supports bull trout, cutthroat trout and whitefish.	T2 Guideline: -Minimal human-caused sedimentation. -Protection of streamside and riparian habitats; no roads in riparian without special permission, however, stream crossing normally acceptable. -Management for large organic debris. -Watershed sensitivity and ECA analysis prior to development. -Protection of spawning and rearing habitat. -Reclamation and hydrologic stabilization where necessary. -Assume level one guidelines in place where level two's are applied.	CORE 1994 East Kootenay Land Use Plan, Polygon 1-3, 1-4 Records of Information. T2 Guideline.
C18	CORE polygon 1-1	Coal Mining	Flathead coalfield • Medium value coal lands are located throughout west side of LU C18. The area not included in the coal lands is the area from the International border intersection with Starvation Creek, east to the Continental Divide; and the west slopes of the Continental Divide from the International border north to Hollebeke Mtn (in LU C17). • The high value lands (exposed coal bearing strata) of the Flathead coalfield are four widely dispersed blocks including: Sage Creek area (1,154 ha) and Cabin Creek area (577 ha) located in LU C16, and Harvey Creek area (962 ha) located on the boundary of LU C16 and C18. Lillyburt area (1,090 ha), in the vicinity of Flathead townsite, is located in LU C17 (p7).	Definitions: • High value coal lands include the area from the outcrop of the coal bearing strata to its inferred depth limit (p1). • Medium value coal land is a corridor for mining related activities and infrastructure, surrounding the exposed coal bearing strata (high value coal lands) (p1).	Morris, Bob. Resource Estimate: East Kootenay Coalfields, 1994. Pages 1, 4, 7; Fig. 5: E.K. Coal Fields Location Map; and Fig. 7: Coal Value Lands Map. Refer to Black Binder, Coal tab for maps.
C18	CORE polygons 1-3, 1-4	Mining	Several mining claims in lower portion of Akamina drainage. Harvey Creek coal deposits in LU 16 identified as KBLUP Coal ERDZ- C-E04 and CORE polygon 1-11.	Mining activities will maintain a 1km buffer from the Flathead River. T1 Guideline: Mines Act / Health, Safety and Reclamation Code / Mineral Tenure Act / Mine Development Assessment Act / Water Act / Fisheries Act / Forest Act / Guidelines for Mineral Exploration / Guidelines for Coal Exploration / Petroleum and Natural Gas Act / Geothermal	CORE 1994 East Kootenay Land Use Plan, Polygon 1-3, 1-4 Records of Information + T1 Guideline.

LU #	Drainage (if applicable)	Topic	Key resource values	Management direction (existing or recommended)	Reference (Source) *(Document, date, section and/or pages)*
				Resources Act / other related regulations and guidelines	
C18	CORE polygon 1-3, 1-4	Oil and Gas	High oil and gas potential throughout. Akamina Kishinena Prov. Pk-northeast boundary modified to remove existing oil and gas tenure. Boundary will be moved back if tenure lapses.		CORE 1994 East Kootenay Land Use Plan, Polygon 1-3, 1-4 Records of Information.
C18	CORE polygon 1-3, 1-4	Unacceptable Uses	Settlement and General Industrial/Commercial Uses are not acceptable uses.		CORE 1994 East Kootenay Land Use Plan, Polygon 1-3, 1-4 Records of Information.
C18-Adjacent	Alberta: Waterton Lakes National Park	Recreation-Commercial Tourism	Wildlife habitat. Concerned regarding commercial recreation llama trekking proposal and implications for indigenous wildlife.	National Parks do not permit llama use on the basis of scientific research by Dr. Stacey Tessarro, Federal Agriculture Center.	Commercial Hunting & Fishing Focus Group session, March 27, 2002.
C19	RMZ C-I04	Agriculture	Grazing	Maintain foraging opportunities for wildlife with no domestic livestock tenures allocated within the unit.	KBLUP IS: Appendix 3, Page 22
C19		Agriculture	Low range value. One grazing permit for guide outfitter horses which overlaps with LU C18. 58 AUMs for LU C18 & C19.	No grazing permitted except for guide outfitter horses.	Cranbrook Forest District Recreation Access Plan (DRAP), March, 2000. LU C19.
C19	Corbin and Fernie Range Units	Agriculture	No range agreement holders in Corbin Range Unit No guide outfitter range agreement holders in the Fernie Range Unit	Corbin Range Unit is exclusively in LU C19. Fernie Range Unit includes most of LU C24 & C19.	Cranbrook Forest District Range Unit Map and Range Agreement Holder information (refer to Range tab in black binder)
C19	CORE polygons 2-3, 2-4	Agriculture	Grazing	Potential for increased agricultural activity. Intent is to pursue the possibility (CORE, East Kootenay Regional Table, Volume 3, Part B Management Guidelines, Agriculture Notes, AG2). Outdoor Recreation Non-Motorized Sector concerned re: expansion of cattle grazing in this unit, however whole heartedly supports CRMPs and the work of the EK Trench Agriculture/ Wildlife Committee. (Refer to Sector Comments with Record of Information) T1 Guideline-Grazing tenures	CORE 1994 East Kootenay Land Use Plan, Polygon 2-3, 2-4 Records of Information.
C19	RMZ C-I04	Recreation	1. Maintain a range of recreation opportunities from roaded resource land to semi-primitive non-motorized	1.1 Manage Ptolemy Plateau for semi primitive non-motorized recreation. **1.2** Recommend **Ptolemy Plateau be designated a Sensitive Area under the FPC.**	KBLUP IS: Appendix 3, Page 22

LU #	Drainage (if applicable)	Topic	Key resource values	Management direction (existing or recommended)	Reference (Source) *(Document, date, section and/or pages)*
			2. Maintain non-commercial public opportunities for backcountry recreation in the Ptolemy Plateau area.	1.3 Develop and implement a management plan for Ptolemy Plateau in cooperation with the Alberta Forest Service. 2.1 Ensure that CBR applications maintain or enhance non-commercial backcountry recreation opportunities.	
C19		Recreation		Backcountry recreation management as per ROS system	KBLUP IS: Chapter 3.9, Page 54-57
C19	CORE polygon 2-3	Recreation-Commercial Tourism	Andy Good plateau: important cave complex requiring special management.	T1 Guideline: -maintain traditional use access; -consultation and consensus on access issues (mining referrals would not normally be routed through tourism unless there was a substantial wilderness impact); -consultation on potential alternatives through resource extraction.	CORE 1994 East Kootenay Land Use Plan, Polygon 2-3 Record of Information + T1 Guideline.
C19	CORE polygon 2-4	Recreation-Commercial Tourism	Important area for outfitter.	T1 Guideline: -maintain traditional use access; -consultation and consensus on access issues (mining referrals would not normally be routed through tourism unless there was a substantial wilderness impact); -consultation on potential alternatives through resource extraction.	CORE 1994 East Kootenay Land Use Plan, Polygon 2-4 Record of Information + T1 Guideline.
C19	E510, E520, E525	Recreation-Visuals	Class 1 Scenic Corridors		KBLUP IS: Chapter 3.8, Pages 52-54
C19	CORE polygon 2-3, 2-4	Recreation-Visuals-tourism + general		T1 Guideline: -Management of high tourism value viewscapes for some enhanced analysis and landscape design (implying no change in timber volume). -Smoke management guidelines -Visual Quality Objectives guidelines apply (implying restrictions on timber volume)	CORE 1994 East Kootenay Land Use Plan, Polygon 1-3, 2-3, 2-4 Records of Information + T1 Guideline.
C19	CORE polygon 2-3	Recreation-Sense of Solitude	Andy Good plateau cave complex requires special management.	T1 Guideline: -Local agreement preferred. -Full range of mechanized and non-mechanized access/activities can be allowed.	CORE 1994 East Kootenay Land Use Plan, Polygon 1-3, 2-3 Records of Information + T1 Guideline.
C19	CORE polygon 2-4	Recreation-Sense of Solitude	Last unroaded portion of the Flathead system. Rugged landscape; breathtaking views; alpine meadows. Undisturbed wilderness. Summer/fall use	T2 Guideline: -Local agreement preferred. -Sensitivity to Solitude experiences.	CORE 1994 East Kootenay Land Use Plan, Polygon 2-4 Record of Information + T2 Guideline.

LU #	Drainage (if applicable)	Topic	Key resource values	Management direction (existing or recommended)	Reference (Source) *(Document, date, section and/or pages)*
			for hunting and hiking. (Refer to Black binder, CORE tab, Polygon 2-4, Sector Comments)	-Enhanced management related to timing, seasonality, mode and distribution of mechanized access/activities, recognize existing and potential future use for tenure holders and consider mechanized recreational users.	
C19	CORE polygon 2-4	Cultural Heritage		T2 Guideline: **Planning:** Public notification and/or review required within development planning process. In the case of highly sensitive or valued sites, extensive public review likely. Mitigation of impacts, protection of resources, and/or recovery of cultural heritage resource before development, may be required. **Access:** Based on local agreements. Guidelines regarding modes/routes of access and levels of use may be required in case of highly sensitive or valued sites. Fencing may be required. Directional signage may be restricted or not allowed. Some buffering from access routes to minimize vandalism. Sensitive sites to be well buffered. Roads to avoid contextual areas. **Facilities:** Restrictions on construction of facilities within contextual areas. In sensitive areas, no development permitted. Temporary site protection may be required. Preservation and reuse of related heritage sites may be permitted under controlled conditions. **Activities** High control level on use of fire and chemicals to protect cultural heritage sites. Activities and party size may be restricted. Establishment of a cultural heritage impact assessment process, including recognized cultural heritage advisors. Development plans to be referred to Community Heritage Commission (or equivalent).	CORE 1994 East Kootenay Land Use Plan, Polygon 2-4 Record of Information + T1 Guideline.
C19	CORE polygon 2-3	Cultural Heritage		T1 Guideline: **Planning:** ID cultural heritage resource (see FPC); Development without preparation of cultural heritage impact assessment. **Access:** restrictions unlikely.	CORE 1994 East Kootenay Land Use Plan, Polygon 2-3 Record of Information + T1 Guideline.

LU #	Drainage (if applicable)	Topic	Key resource values	Management direction (existing or recommended)	Reference (Source) *(Document, date, section and/or pages)*
				Directional signage to cultural/heritage sites permitted. Signage re: visitor behaviour and to ID site as significiant cultural/heritage feature desired. Land trades possible to create access across private lands. **Facilities:** Major construction permitted at cultural heritage resource sites. Buffering not required. Adaptive reuse of appropriate heritage structures without restriction. **Activities:** restrictions unlikely. Resource extraction or harvesting unlikely to be restricted for cultural heritage values. Environmental protection opportunities for special exemption from mining reclamation.	
C19	E490	Watershed	Class 1 Domestic Watershed		KBLUP IS: Chapter 3.7, Page 30-52
C19		Biodiversity – Rare and Endangered Species	Fisher - Blue listed (vulnerable) Habitat: dense, late seral coniferous or mixed wood. Distribution: may currently occupy the southeast corner of B.C. in low densities, and at high elevation. Historical range includes the west and southeast portions of the Cranbrook Forest District.		Listed Vertebrate and Vascular Plant Species Occurring in the Cranbrook Forest District and in the Southern Rocky Mountain Management Plan Area. March, 2002. Page 11.
C19		Biodiversity – Rare and Endangered Species	Badger (Taxidea taxus) - Red listed (threatened or endangered) Habitat: non-forest and open Douglas-fir Distribution: occur in the southern half of the Cranbrook Forest District, in the Kootenay River Drainage and in the Elk Valley.		Listed Vertebrate and Vascular Plant Species Occurring in the Cranbrook Forest District and in the Southern Rocky Mountain Management Plan Area. March, 2002. Page 12.
C19		Biodiversity Emphasis	Low Biodiversity Emphasis		KBLUP IS: Chapter 3.2, Page 3-6; Appendix 3 - Appendix C
C19	RMZ C-I04	Biodiversity - General	1. Retain forest and rangeland ecological elements and processes at a moderate risk. 2. Retain attributes for old growth dependent species and fur bearers. 3. Ensure habitat requirements for red and blue listed species are achieved.	**3.1 Tailed Frog should be designated as an identified wildlife species under the FPC.**	KBLUP IS: Appendix 3, Page 22
C19	CORE polygon 2-3	Biodiversity - General	Designated land use: Integrated	T1 Guideline: Interior Fish-Forestry Guidelines / Riparian and Streamside	CORE 1994 East Kootenay Land Use Plan, Polygon 2-3 Record of

LU #	Drainage (if applicable)	Topic	Key resource values	Management direction (existing or recommended)	Reference (Source) *(Document, date, section and/or pages)*
				Management Guidelines / Wildlife Tree Guidelines / Specific plans for red/blue listed species management	Information + T1 Guideline.
C19		Biodiversity – Connectivity	All or a portion of LU is important for regional connectivity		KBLUP IS: Chapter 3.3, Page 6-8
C19	CORE polygon 2-4	Biodiversity - General	1. Land use designation not agreed on. Proposed Protected/Special/Integrated/Dedicated. Very high multi-sector values. 2. Part of the Border Ranges Ecosection. 3. 2-4 is the only low elevation area in the drainage that is unroaded. 4. Extensive riparian areas along the river with meadows along the Flathead River and portions of McEvoy Creek.	T2 Guideline: -Enhanced FENs; riparian protection; wide corridors; significant OG protection; -Landscape habitat mosaic is diverse in stand, age classes, types, structures and composition. -Rare and unique habitats and species protected. -Providing habitat for regional inter-protected area linkage corridors and buffers is a part of management objectives for area. -Minimize expansion of settlement or industrial/commercial use -Restoration/rehabilitation of disturbed sites	CORE 1994 East Kootenay Land Use Plan, Polygon 2-4 Records of Information + T2 Guideline.
C19	CORE polygon 2-4	Biodiversity-Old Growth	Remnant stands	T1 Guideline: FENs / Interior Fish-Forestry-Wildlife Guidelines / Regional Wildlife Habitat Guidelines.	CORE 1994 East Kootenay Land Use Plan, Polygon 2-4 Records of Information + T1 Guideline.
C19	CORE polygon 2-3	Biodiversity-Old Growth		T2 Guideline: Significant retention of old growth across the landscape. FEN's with major old growth component. Corridors and riparian dominantly old growth. Wide corridors.	CORE 1994 East Kootenay Land Use Plan, Polygon 2-3 Record of Information + T2 Guideline.
C19	CORE polygon 2-3, 2-4	Biodiversity – Natural grasslands	Limited to small areas of NDT5-alpine tundra and subalpine parkland	T1 Guideline: Weed control / Maintenance of riparian habitats / Grazing management guidelines/ Off-road vehicle control / Monitoring of range condition and trend in terms of domestic and wildlife grazers	CORE 1994 East Kootenay Land Use Plan, Polygon 2-3, 2-4 Records of Information, T1 Guideline + Natural Disturbance Type mapping.
C19	Natal/Michel/ Leach Wildlife Range Complex	Ungulates – Elk	Natal/Michel/Leach Wildlife Range Complex is critical elk winter and spring habitat, designated for Intensive Wildlife Management (Category 1). Biophysical Units: • Class 1 - wildlife winter habitat (elk, sheep, moose, goat, mule deer). • Class 2 – mule deer and sheep winter habitat known / suspected mineral licks.	Wildlife management is recommended as the dominant use. A combination of the following general habitat enhancement activities would be intensively applied to these areas: -Integrated local resource use planning. -Critical habitat identification and protection. -Exploration/mining reclamation; -Impact management activities negotiated under the Mine Development Review Process; -Logging, burning, grazing;	Elk-Flathead Operational Wildlife Plan. Prepared Jointly by the Planning and Assessment Branch and Cranbrook Wildlife Branch, MOE. December, 1987. Page 13, and Appendix 1. Page 1-2.

LU #	**Drainage** (if applicable)	**Topic**	**Key resource values**	**Management direction** (existing or recommended)	**Reference (Source)** *(Document, date, section and/or pages)*
			This Range Complex is located in LU: C19, C20, C38; C19 contains 3 known mineral licks (refer to Elk-Flathead Operational Wildlife Plan Map and Cross Reference in the LU Summary background information binder)	-Herbicide, fertilizer treatment; -Slash/brush control, cultivation; -Access planning and management; -Collision mortality management (fencing, underpass, snow clearing); -Winter feeding (restricted).	
C19	RMZ C-I04	Ungulates	1. Maintain abundance of elk, mule deer, Rocky Mountain Goats and Rocky Mountain Big Horn Sheep by maintaining foraging opportunities for wildlife.	1.1 No domestic livestock tenures to be issued within the unit	KBLUP IS: Appendix 3, Page 22
C19		Ungulates	Ungulate winter ranges (EX)		KBLUP IS: Chapter 3.5, Page 17-24
C19	CORE polygon 2-3, 2-4	Ungulates		T1 Guideline applies to ungulate winter range throughout the unit. Wildlife harvesting guidelines; TSA harvesting guidelines; Specific referrals on the ground.	CORE 1994 East Kootenay Land Use Plan, Polygon 2-3, 2-4 Record of Information, T1 Guideline.
C19		Wide ranging carnivores	Priority 2 Grizzly Bear Habitat		KBLUP IS: Chapter 3.4, Page 8-17
C19	CORE polygon 2-3	Wide ranging carnivores	Important wildlife values	T1Guideline: Interior fish-forestry guidelines / FENs / Access control / Landfill regulations / Management of prey species / Maintenance of seasonal feeding and breeding areas / Harvesting regulations	CORE 1994 East Kootenay Land Use Plan, Polygon 2-3 Record of Information, T1 Guideline.
C19	CORE polygon 2-4	Wide ranging carnivores		T2 Guideline: -Seasonal feeding and breeding habitats protected; -Conservation of seasonal feeding and breeding areas; silvicultural treatments to favour food production; -Road densities minimal and access management coordinated to avoid conflicts with habitat use. -Minimal human habitation and no sanitary landfills. -Predator control only under special circumstances. -Special grazing management to protect carnivore values	CORE 1994 East Kootenay Land Use Plan, Polygon 2-4 Records of Information, T2 Guideline.
C19	CORE polygon 2-3	Fisheries		T1 Guideline: Interior Fish-Forestry Guidelines / Riparian and Streamside Management Guidelines / Maintenance of spawning and rearing habitat	CORE 1994 East Kootenay Land Use Plan, Polygon 2-3 Record of Information, T1 Guideline.

LU #	**Drainage** (if applicable)	**Topic**	**Key resource values**	**Management direction** (existing or recommended)	**Reference (Source)** *(Document, date, section and/or pages)*
C19	CORE polygon 1-1	Coal Mining	Crowsnest coalfield • Medium and high value coal lands are located throughout LU C19 except for a narrow band along the west slopes of the Continental Divide. • The high value, exposed coal bearing lands of the Crowsnest coalfield include three areas: Fernie block (73,333 ha) located in LU C17, C19, C24, C38; Corbin area (962 ha) located in C19; and Tent Mountain area (1,603 ha) (p7) located in C19 on private land. • The high value lands of the Fernie block lay along the west half of LU C19. The area of the entire Fernie block high value lands is 73,333 ha (p7), which is mainly on private land.	Definitions: • **High value coal lands** include the area from the outcrop of the **coal bearing strata** to its inferred depth limit (p1). • **Medium value** coal land is a corridor for mining related activities **and infrastructure**, surrounding the exposed coal bearing strata (**high value** coal lands) (p1).	Morris, Bob. Resource Estimate: East Kootenay Coalfields, 1994. Pages 1, 4, 7; Fig. 5: E.K. Coal Fields Location Map; and Fig. 7: Coal Value Lands Map. Refer to Black Binder, Coal tab for maps.
C19	CORE polygons 2-3, 2-4	Coal Mining	Polygon 2-3: Integrated. Corbin (Byron Creek) coal mine in LU 19 is mostly on private land. Coal subcrop and associated infrastructure and transportation corridor located on Crown land to be designated as Dedicated. Coal leases on south slope of Tent Mountain and infrastructure and transportation corridor, to be designated Dedicated.	T1 Guideline: Mines Act / Health, Safety and Reclamation Code / Mineral Tenure Act / Mine Development Assessment Act / Water Act / Fisheries Act / Forest Act / Guidelines for Mineral Exploration / Guidelines for Coal Exploration / Petroleum and Natural Gas Act / Geothermal Resources Act / other related regulations and guidelines	CORE 1994 East Kootenay Land Use Plan, Polygon 2-3, 2-4 Records of Information + T1 Guideline
C19	RMZ C-E02	Coal Mining	CPR block south of Hosmer. Block of Provincial land surrounded by private Shell lands.	Priority management emphasis is on the coal resources and their exploration, development and production. Guidelines for Coal ERDZ are only provided for C-E01 (Fording area: LU C20, 21, 22, 23, 38). Specific guidelines were not been developed for C-E02 to C-E04.	KBLUP IS: Ch 3.14, Pages 78-79
C19	CORE polygon 2-9 (RMZ C-E02)	Coal Mining	CPR block	Values requiring enhanced management (T2 guidelines) include: Wide ranging carnivores; Fisheries; Biodiversity; Sense of Solitude and Heritage/Culture.	CORE 1994 East Kootenay Land Use Plan, Polygon 2-9 Record of Information.
C19	RMZ C-E03	Coal Mining	Corbin	Priority management emphasis is on the coal resources and their exploration, development and production. Guidelines for Coal ERDZ are only provided for C-E01 (Fording area: LU C20, 21, 22, 23, 38). Specific guidelines have not been	KBLUP IS: Ch 3.14, Pages 78-79

LU #	Drainage (if applicable)	Topic	Key resource values	Management direction (existing or recommended)	Reference (Source) *(Document, date, section and/or pages)*
				developed for C-E02 to C-E04	
C19	CORE polygon 2-6 (RMZ C-E03)	Coal Mining	CORE- No Record of Information providing management guidelines for this polygon.		CORE 1994 East Kootenay Land Use Plan, Polygon 2-6
C19	CORE polygon 2-2	Private/Federal lands	Shell-Elkview-Dominion block A major block of private land. The north portion (Wheeler area) belongs to Elkview Mining; the south and east portions belong to Shell Canada. The unit includes two "Dominion" blocks owned by the federal Crown.	Recommend multi-stakeholder discussion on biodiversity issues relating to large blocks of private land.	CORE 1994 East Kootenay Land Use Plan, Polygon 2-2, 2-5 Records of Information.
C19	CORE polygon 2-3, 2-4	Unacceptable Uses	Settlement and General Industrial/Commercial Uses are not acceptable uses.		CORE 1994 East Kootenay Land Use Plan, Polygon 2-3, 2-4 Records of Information.
C20	Fording Divide PAS Unit 53	1993 Best PAS Areas	Adjacent to the continental divide, extending south of Elk Lakes Provincial Park to the headwaters of Line Creek. PAS Value: The Fording Divide is an enhancement to Elk Lakes Provincial Park, Elk Lake Recreation Area and Height of the Rockies Wilderness Area. It connects habitat for nationally significant populations of bighorn sheep, mountain goat and grizzly bear to Kananaskis Country. Diversity: This unit connects to Height of the Rockies W.A. via Elk Lakes Provincial Park and Kananaskis Country. It provides alpine grassland/high elevation bighorn sheep winter range, and is nationally significant for bighorn sheep and mountain goat populations shared with Alberta. It encompasses riparian values and as the headwaters of the Elk River, is significant in the ecosection for bull and cutthroat and whitefish. It provides important grizzly bear habitat, including rutting areas. Viability: This unit is of sufficient size to be viable	1993 recommended Priority Two area for protection	Best P.A.S. Report. Identification, Evaluation and Ranking of Areas within the Kootenay Region that meet the Protected Areas Strategy Goals and Criteria. Prepared by Conservation, Recreation and Cultural Heritage Subgroups of the Kootenay Regional Protected Areas Team (RPAT). November, 1993. Unit 53

LU #	**Drainage** (if applicable)	**Topic**	**Key resource values**	**Management direction** (existing or recommended)	**Reference (Source)** *(Document, date, section and/or pages)*
			(49,044 ha), but because of its long, narrow shape, it should be considered as an addition to other protected areas. Naturalness in 1993: Less than 25% disturbed by roads and logging.		
C20		Agriculture	Moderate range values. Range agreements: One cattle grazing license and one grazing permit in LU C20 & C24. 400 AUMs attributable to LU C20		Cranbrook Forest District Recreation Access Plan. March, 2000. LU C20.
C20	Upper Elk and Alexander Creek Range Units	Agriculture	Upper Elk Range Agreement Holders: GT: Fontana Bighorn Outfitters- 184 AUMs GT: Nancy Davidson- 72 AUMs GT: Gino Busato 33 AUMs Alexander Creek Range Agreement Holders: Bryant- 303 AUMs	GT indicates that the Range Agreement Area matches the Guide Outfitting Territory. Upper Elk Range Unit includes LU C20 (part), C21, C22 (except Ht of the Rockies W.A., C23, C38. Alexander Creek Range Unit is fully within LU C20.	Cranbrook Forest District Range Unit Map and Range Agreement Holder information (refer to Range tab in black binder)
C20	CORE polygon 3-2, 3-8	Agriculture		Outdoor Recreation non-motorized sector expresses concern with regard to expansion of cattle grazing in this unit, however whole heartedly supports CRMP's and the work of the EK Trench Agriculture/Wildlife Committee. (Refer to Sector Comments, Polygon 2-1 Record of Information). T1 Guideline-Grazing tenures	CORE 1994 East Kootenay Land Use Plan, Polygon 3-2, 3-8 Records of Information + T1 Guideline.
C20	Fording Divide PAS Unit 53	Cultural Heritage	Regional to national significance for representation of pre-economic activities and native system. Contains lithic scatter sites with subsurface deposits.		Best P.A.S. Report. Identification, Evaluation and Ranking of Areas within the Kootenay Region that meet the Protected Areas Strategy Goals and Criteria. Prepared by Conservation, Recreation and Cultural Heritage Subgroups of the Kootenay Regional Protected Areas Team (RPAT). November, 1993. Unit 53.
C20		Biodiversity – Rare and Endangered	Badger (Taxidea taxus) - Red listed (threatened or endangered) Habitat: non-forest and open Douglas-fir.		Listed Vertebrate and Vascular Plant Species Occurring in the Cranbrook Forest District and in

LU #	Drainage (if applicable)	Topic	Key resource values	Management direction (existing or recommended)	Reference (Source) *(Document, date, section and/or pages)*
		Species	Distribution: occur in the southern half of the Cranbrook Forest District, in the Kootenay River Drainage and in the Elk Valley.		the Southern Rocky Mountain Management Plan Area. March, 2002. Page 12.
C20	Natal/Michel/ Leach Wildlife Range Complex	Ungulates – Elk	Natal/Michel/Leach Wildlife Range Complex is critical elk winter and spring habitat, designated for Intensive Wildlife Management (Category 1). Biophysical Units: • Class 1 - wildlife winter habitat (elk, sheep, moose, goat, mule deer). • Class 2 – mule deer and sheep winter habitat known / suspected mineral licks. This Range Complex is located in LU: C19, C20, C38; C19 contains 3 known mineral licks (refer to Elk-Flathead Operational Wildlife Plan Map and Cross Reference in the LU Summary background information binder).	Wildlife management is recommended as the dominant use. A combination of the following general habitat enhancement activities would be intensively applied to these areas: -Integrated local resource use planning; -Critical habitat identification and protection; -Exploration/mining reclamation; -Impact management activities negotiated under the Mine Development Review Process; -Logging, burning, grazing; -Herbicide, fertilizer treatment; -Slash/brush control, cultivation; -Access planning and management; -Collision mortality management (fencing, underpass, snow clearing); -Winter feeding (restricted).	Elk-Flathead Operational Wildlife Plan. Prepared Jointly by the Planning and Assessment Branch and Cranbrook Wildlife Branch, MOE. December, 1987. Page 13, and Appendix 1, Page 1-2.
C20	East Side Wildlife Range Complex	Ungulates – Bighorn Sheep and Elk	East Side Wildlife Range Complex is critical elk and bighorn sheep winter and spring habitat, designated for Intensive Wildlife Management (Category 1). Biophysical Units: • Class 1 - wildlife winter habitat (elk, sheep, moose, goat, mule deer). • Class 2 – mule deer and sheep winter habitat known / suspected mineral licks. This Range Complex is located in LU: C20 and C21 and includes Sheep Mtn, Ewin, Todhunter, Chauncey, Eagle, Turnbull and Henretta; C21 contains 1 known mineral lick (refer to Elk-Flathead Operational Wildlife Plan Map and Cross Reference in the LU Summary background information binder).	Wildlife management is recommended as the dominant use. A combination of the following general habitat enhancement activities would be intensively applied to these areas: -Integrated local resource use planning; -Critical habitat identification and protection; -Exploration/mining reclamation; -Impact management activities negotiated under the Mine Development Review Process; -Logging, burning, grazing; -Herbicide, fertilizer treatment; -Slash/brush control, cultivation; -Access planning and management; -Collision mortality management (fencing, underpass, snow clearing); -Winter feeding (restricted).	Elk-Flathead Operational Wildlife Plan. Prepared Jointly by the Planning and Assessment Branch and Cranbrook Wildlife Branch, MOE. December, 1987. Page 13, and Appendix 1, Page 1-2.

LU #	**Drainage** (if applicable)	**Topic**	**Key resource values**	**Management direction** (existing or recommended)	**Reference (Source)** *(Document, date, section and/or pages)*
C20			*LU C20-22, 28 & 38 (SRMMP resource evaluation area) entry in this spreadsheet is not complete*		
C21	Fording Divide PAS Unit 53	1993 Best PAS Areas	Adjacent to the continental divide, extending south of Elk Lakes Provincial Park to the headwaters of Line Creek. PAS Value: The Fording Divide is an enhancement to Elk Lakes Provincial Park, Elk Lake Recreation Area and Height of the Rockies Wilderness Area. It connects habitat for nationally significant populations of bighorn sheep, mountain goat and grizzly bear to Kananaskis Country. Diversity: This unit connects to Height of the Rockies W.A. via Elk Lakes Provincial Park and Kananaskis Country. It provides alpine grassland/high elevation bighorn sheep winter range, and is nationally significant for bighorn sheep and mountain goat populations shared with Alberta. It encompasses riparian values and as the headwaters of the Elk River, is significant in the ecosection for bull and cutthroat and whitefish. It provides important grizzly bear habitat, including rutting areas. Viability: This unit is of sufficient size to be viable (49,044 ha), but because of its long, narrow shape, it should be considered as an addition to other protected areas. Naturalness in 1993: Less than 25% disturbed by roads and logging.	1993 recommended Priority Two area for protection.	Best P.A.S. Report. Identification, Evaluation and Ranking of Areas within the Kootenay Region that meet the Protected Areas Strategy Goals and Criteria. Prepared by Conservation, Recreation and Cultural Heritage Subgroups of the Kootenay Regional Protected Areas Team (RPAT). November, 1993. Unit 53.
C21	Fording Divide PAS Unit 53	Cultural Heritage	Regional to national significance for representation of pre-economic activities and native system. Contains lithic scatter sites with subsurface deposits.		Best P.A.S. Report. Identification, Evaluation and Ranking of Areas within the Kootenay Region that meet the Protected Areas Strategy Goals and Criteria. Prepared by

LU #	Drainage (if applicable)	Topic	Key resource values	Management direction (existing or recommended)	Reference (Source) *(Document, date, section and/or pages)*
					Conservation, Recreation and Cultural Heritage Subgroups of the Kootenay Regional Protected Areas Team (RPAT). November, 1993. Unit 53.
C21	Elkford east to Continental Divide	Biodiversity – Rare and Endangered Species	Least Chipmunk- – Blue listed (vulnerable) Habitat: Alpine and sub alpine. Distribution: Akamina Pass and Elkford area		Listed Vertebrate and Vascular Plant Species Occurring in the Cranbrook Forest District and in the Southern Rocky Mountain Management Plan Area. March, 2002. Page 10.
C21	East Side Wildlife Range Complex	Ungulates – Bighorn Sheep and Elk	East Side Wildlife Range Complex is critical elk and bighorn sheep winter and spring habitat, designated for Intensive Wildlife Management (Category 1). Biophysical Units: • Class 1 - wildlife winter habitat (elk, sheep, moose, goat, mule deer). • Class 2 – mule deer and sheep winter habitat known / suspected mineral licks. This Range Complex is located in LU: C20 and C21 and includes Sheep Mtn, Ewin, Todhunter, Chauncey, Eagle, Turnbull and Henretta; C21 contains 1 known mineral lick (refer to Elk-Flathead Operational Wildlife Plan Map and Cross Reference in the LU Summary background information binder).	Wildlife management is recommended as the dominant use. A combination of the following general habitat enhancement activities would be intensively applied to these areas: -Integrated local resource use planning; -Critical habitat identification and protection; -Exploration/mining reclamation; -Impact management activities negotiated under the Mine Development Review Process; -Logging, burning, grazing; -Herbicide, fertilizer treatment; -Slash/brush control, cultivation; -Access planning and management; -Collision mortality management (fencing, underpass, snow clearing). -Winter feeding (restricted).	Elk-Flathead Operational Wildlife Plan. Prepared Jointly by the Planning and Assessment Branch and Cranbrook Wildlife Branch, MOE. December, 1987. Page 13, and Appendix 1, Page 1-2
C21	Upper Elk/ Greenhills/ Fording Wildlife Range Complex	Ungulates – Elk	Upper Elk/Greenhills/ Fording Wildlife Range Complex is elk winter and spring habitat designated for Active Wildlife Management (Category 2). Biophysical Units: • Class 2 – elk, moose, goat winter winter habitat. • Class 3 – all ungulate species winter habitat. • Class 3 – all ungulate species summer range	Wildlife management would be given equal consideration in specific areas. A combination of the following general management and enhancement techniques would be actively pursued in an interated resource management strategy: -Logging which could benefit/complement wildlife; -Integated silvicultural practices; -Exploration/mining reclamation; -Access planning;	Elk-Flathead Operational Wildlife Plan. Prepared Jointly by the Planning and Assessment Branch and Cranbrook Wildlife Branch, MOE. December, 1987. Page 13, and Appendix 1, Page 1-3

LU #	Drainage (if applicable)	Topic	Key resource values	Management direction (existing or recommended)	Reference (Source) *(Document, date, section and/or pages)*
			This Range Complex is located in LU: C21, C22, C23 and C38; 1 known mineral lick is located in C21 and 1 known lick is located in C22 (refer to Elk-Flathead Operational Wildlife Plan Map and Cross Reference in the LU Summary background information binder).	-Impact management activities negotiated through the Mine Development Review Process	
C22	Fording Divide PAS Unit 53	1993 Best PAS Areas	Adjacent to the continental divide, extending south of Elk Lakes Provincial Park to the headwaters of Line Creek. PAS Value: The Fording Divide is an enhancement to Elk Lakes Provincial Park, Elk Lake Recreation Area and Height of the Rockies Wilderness Area. It connects habitat for nationally significant populations of bighorn sheep, mountain goat and grizzly bear to Kananaskis Country. Diversity: This unit connects to Height of the Rockies W.A. via Elk Lakes Provincial Park and Kananaskis Country. It provides alpine grassland/high elevation bighorn sheep winter range, and is nationally significant for bighorn sheep and mountain goat populations shared with Alberta. It encompasses riparian values and as the headwaters of the Elk River, is significant in the ecosection for bull and cutthroat and whitefish. It provides important grizzly bear habitat, including rutting areas Viability: This unit is of sufficient size to be viable (49,044 ha), but because of its long, narrow shape, it should be considered as an addition to other protected areas. Naturalness in 1993: Less than 25% disturbed by roads and logging.	1993 recommended Priority Two area for protection.	Best P.A.S. Report. Identification, Evaluation and Ranking of Areas within the Kootenay Region that meet the Protected Areas Strategy Goals and Criteria. Prepared by Conservation, Recreation and Cultural Heritage Subgroups of the Kootenay Regional Protected Areas Team (RPAT). November, 1993. Unit 53.

LU #	**Drainage** (if applicable)	**Topic**	**Key resource values**	**Management direction** (existing or recommended)	**Reference (Source)** *(Document, date, section and/or pages)*
C22	Fording Divide PAS Unit 53	Cultural Heritage	Regional to national significance for representation of pre-economic activities and native system. Contains lithic scatter sites with subsurface deposits.		Best P.A.S. Report. Identification, Evaluation and Ranking of Areas within the Kootenay Region that meet the Protected Areas Strategy Goals and Criteria. Prepared by Conservation, Recreation and Cultural Heritage Subgroups of the Kootenay Regional Protected Areas Team (RPAT). November, 1993. Unit 53.
C22	West Side Wildlife Range Complex	Ungulates – Bighorn Sheep	West Side Wildlife Range Complex is critical bighorn sheep winter and spring habitat, designated for Intensive Wildlife Management (Category 1). Biophysical Units: • Class 1 - wildlife winter habitat (elk, sheep, moose, goat, mule deer). • Class 2 – mule deer and sheep winter habitat known / suspected mineral licks. This Range Complex is located in LU: C22 and C23 and includes Quarry, Forsyth, Crossing, Boivin and Brule; C22 contains 1 known mineral lick (refer to Elk-Flathead Operational Wildlife Plan Map and Cross Reference in the LU Summary background information binder).	Wildlife management is recommended as the dominant use. A combination of the following general habitat enhancement activities would be intensively applied to these areas: -Integrated local resource use planning; -Critical habitat identification and protection; -Exploration/mining reclamation; -Impact management activities negotiated under the Mine Development Review Process; -Logging, burning, grazing; -Herbicide, fertilizer treatment; -Slash/brush control, cultivation; -Access planning and management; -Collision mortality management (fencing, underpass, snow clearing); -Winter feeding (restricted).	Elk-Flathead Operational Wildlife Plan. Prepared Jointly by the Planning and Assessment Branch and Cranbrook Wildlife Branch, MOE. December, 1987. Page 13, and Appendix 1, Page 1-2.
C22	Upper Elk/ Greenhills/ Fording Wildlife Range Complex	Ungulates – Elk	Upper Elk/Greenhills/ Fording Wildlife Range Complex is elk winter and spring habitat designated for Active Wildlife Management (Category 2). Biophysical Units: • Class 2 – elk, moose, goat winter winter habitat. • Class 3 – all ungulate species winter habitat. • Class 3 – all ungulate species summer range	Wildlife management would be given equal consideration in specific areas. A combination of the following general management and enhancement techniques would be actively pursued in an interated resource management strategy: -Logging which could benefit/complement wildlife; -Integated silvicultural practices; -Exploration/mining reclamation; -Access planning; -Impact management activities negotiated through the Mine	Elk-Flathead Operational Wildlife Plan. Prepared Jointly by the Planning and Assessment Branch and Cranbrook Wildlife Branch, MOE. December, 1987. Page 13, and Appendix 1, Page 1-3.

LU #	**Drainage** (if applicable)	**Topic**	**Key resource values**	**Management direction** (existing or recommended)	**Reference (Source)** *(Document, date, section and/or pages)*
			This Range Complex is located in LU: C21, C22, C23 and C38; 1 known mineral lick is located in C21 and 1 known lick is located in C22 (refer to Elk-Flathead Operational Wildlife Plan Map and Cross Reference in the LU Summary background information binder).	Development Review Process.	
C23		Agriculture	Moderate range values: 3 grazing permits for a total 260 AUMs.		Cranbrook Forest District Recreation Access Plan March, 2000. LU C23.
C23	Range Unit-Upper Elk (C21, C23, and part of C19, C20, C22, C38)	Agriculture	Upper Elk Range Agreement Holders: GT: Fontana Bighorn Outfitters-184 AUMs GT: Nancy Davidson- 72 AUMs GT: Gino Busato- 33 AUMs Ken Musil 124 AUMs	If marked with GT, the Range Agreement Area matches the Guide Outfitting Territory	Cranbrook Forest District Range Unit Map and Range Agreement Holder information (refer to Range tab in black binder)
C23	CORE polygon 3-2, 3-3	Agriculture		Polygon 3-3 -Potential for increased agricultural activity. Intent is to pursue the possibility (CORE, East Kootenay Regional Table, Volume 3, Part B Management Guidelines, Agriculture Notes, AG2). Outdoor Recreation non-motorized sector expresses concern with regard to expansion of cattle grazing in this unit. Whole heartedly supports coordinated resource management plans. Polygon 3-2, 3-3: T1 Guideline-Grazing tenures	CORE 1994 East Kootenay Land Use Plan, Polygon 3-2; 3-3 Records of Information + T1 Guideline.
C23	Cummings Creek	Access Management	District of Sparwood wants to promote recreational activity in the Wilson Creek (Cummings Creek) area to attract economic development.	Detailed planning is required to resolve motorized and non-motorized use conflicts.	Local Government Focus Group session, March 27, 2002
C23		Access Management	Heavy industry on east side of Elk River has cumulative impacts on wildlife.	East side heavy industry should be considered when designating access on the west side of the river, and a more conservative approach in terms of wildlife, should be taken.	Commercial Hunting & Fishing Focus Group session, March 27, 2002
C23	Telford Creek Sulphur Creek	Access Management	Telford Creek to Sulphur Creek sheep habitat	Has existing high levels of motorized use which need to be addressed.	Commercial Hunting & Fishing Focus Group session, March 27, 2002
C23	RMZ C-E01: PC E195,	Access Management	In context of Coal ERDZ designation, ensure the range of objectives and strategies are integrated in	Proposals for new road development or expansions will be evaluated through either: an enhanced referral process as per Access	KBLUP IS: Appendix 3, Page 32

LU #	**Drainage** (if applicable)	**Topic**	**Key resource values**	**Management direction** (existing or recommended)	**Reference (Source)** *(Document, date, section and/or pages)*
	E210, E215		the Upper Fording area, particularly as related to access for proposed development.	Management Guidelines, Chapter 3.12; or special measures in cases requiring immediate attention due to imminent development.	
C23	RMZ C-S01	Recreation	1 Maintain recreation opportunities from roaded to semi-primitive non-motorized.	1.1 Manage access roads to MOF recreation sites and trails as roaded resource land setting (eg trailhead and recreation site at entrance to Height of the Rockies Provincial Park, and Weary Recreation Site). 1.2 Implement motorized use restrictions as required to maintain semi-primitive non-motorized character.	KBLUP IS: Appendix 3, Page 4
C23	RMZ C-E01: PC E195, E210, E215	Recreation	In context of Coal ERDZ designation, maintain recreation opportunities from roaded to semi primitive non- motorized	Manage the Elk River as a Backcountry River Corridor consistent with the Backcountry Recreation Guidelines.	KBLUP IS: Appendix 3, Page 32
C23	CORE polygon 3-2	Recreation	Polygon is defined by high value coal lands in the Upper Elk.	Recreational access, consistent with the safety and needs of the coal operations, will continue to be provided.	CORE 1994 East Kootenay Land Use Plan, Polygon 3-2 Record of Information.
C23		Recreation	Backcountry Recreation Management as per ROS		KBLUP IS: Ch. 3.9, Page 54-57
C23	CORE polygon 3-2; 3-3	Recreation-Commercial Tourism	High recreational value for wilderness and hunting interests in the Elk Valley. Possibility of highway 43 going through to Alberta in lower elevation at south end.	T1 Guideline: -maintain traditional use access; -consultation and consensus on access issues (mining referrals would not normally be routed through tourism unless there was a substantial wilderness impact); -consultation on potential alternatives through resource extraction.	CORE 1994 East Kootenay Land Use Plan, Polygon 3-2; 3-3 Records of Information + T1 Guideline.
C23	PC E065	Recreation-Visuals	Class 1 Scenic Corridor		KBLUP IS: Ch. 3.8, Page 52-54
C23	RMZ C-S01	Recreation-Visuals	Class 3 Scenic Corridor		KBLUP IS: Ch. 3.8, Page 52-54
C23	CORE polygon 3-2; 3-3	Recreation-Visuals	Higher alpine areas; highway corridor	T1 Guideline: Tourism visuals-management of high tourism value viewscapes for some enhanced analysis and landscape design (implying no change in timber volume). General visuals-smoke management guidelines; -Visual Quality Objectives guidelines apply (implying restrictions on timber volume)	CORE 1994 East Kootenay Land Use Plan, Polygon 3-3 Records of Information + T1 Guideline.
C23	CORE polygon 3-2; 3-3	Recreation – Sense of Solitude	Polygon 3-3: Mt. Washburn extremely high karst-potential wilderness area. Horniday proposal; Area also proposed for wilderness status by local fish and wildlife group.	T1 Guideline: -Local agreement preferred. -Full range of mechanized and non-mechanized access/activities can be allowed.	CORE 1994 East Kootenay Land Use Plan, Polygon 3-2; 3-3 Records of Information + T1 Guideline.

LU #	**Drainage** (if applicable)	**Topic**	**Key resource values**	**Management direction** (existing or recommended)	**Reference (Source)** *(Document, date, section and/or pages)*
C23	CORE polygon 3-2; 3-3	Cultural Heritage		T2 Guideline: **Planning:** Public notification and/or review required within development planning process. In the case of highly sensitive or valued sites, extensive public review likely. Mitigation of impacts, protection of resources, and/or recovery of cultural heritage resource before development, may be required. **Access:** Based on local agreements. Guidelines regarding modes/routes of access and levels of use may be required in case of highly sensitive or valued sites. Fencing may be required. Directional signage may be restricted or not allowed. Some buffering from access routes to minimize vandalism. Sensitive sites to be well buffered. Roads to avoid contextual areas. **Facilities:** Restrictions on construction of facilities within contextual areas. In sensitive areas, no development permitted. Temporary site protection may be required. Preservation and reuse of related heritage sites may be permitted under controlled conditions **Activities** High control level on use of fire and chemicals to protect cultural heritage sites. Activities and party size may be restricted. Establishment of a cultural heritage impact assessment process, including recognized cultural heritage advisors. Development plans to be referred to Community Heritage Commission (or equivalent)	CORE 1994 East Kootenay Land Use Plan, Polygon 3-2; 3-3 Records of Information + T2 Guideline.
C23	PC E105	Watershed	Class 1 Domestic Watershed		KBLUP IS: Ch. 3.7, Page 30-52
C23	PC: E175, E130, E105, E100, E095	Watershed	Class 1 Domestic Watershed		KBLUP IS: Ch. 3.7, Page 30-52
C23	PC: E160, E165, E170, E065, E070, E075, E080, E085, E090	Watershed	Elkford (Boivan Creek), Sparwood (Cummings Creek) Community Watersheds		KBLUP IS: Ch. 3.7, Page 30-52
C23		Biodiversity	High Biodiversity Emphasis		KBLUP IS: Ch. 3.2, Page 3-6

LU #	Drainage (if applicable)	Topic	Key resource values	Management direction (existing or recommended)	Reference (Source) *(Document, date, section and/or pages)*
		Emphasis			Appendix 3 - Appendix C
C23	RMZ C-S01	Biodiversity-General	1. Maintain regional connectivity between the Wigwam, Elk and Bull watersheds to the Height of the Rockies Provincial Park and Mount Assiniboine and Kootenay National Parks. 2. Retain attributes for old growth dependent species and fur bearers. 3. Maintain sufficient alpine habitat to sustain Ptarmigan at or above the current population levels.	1.1 Apply connectivity guidelines within the regional connectivity corridor as indicated in Ch 3.3. 2.1 Priority areas for OGMA establishment include the unit. 3.1 Address Ptarmigan habitat requirements through access management planning (consistent with Access Management Guidelines, Chapter 3.2.)	KBLUP IS: Appendix 3, Page 4
C23	Forsyth Creek	Biodiversity - Connectivity	Forsyth Creek corridor to Height of the Rockies is a bottleneck.	Connectivity northward requires LU C22 inclusion in the plan.	
C23		Biodiversity-Connectivity	All or portion of unit is important for connectivity.		KBLUP IS: Ch. 3.3, Page 6-8
C23	CORE polygon 3-3	Biodiversity – General	Part of the Border Ranges ecosection. Important wildlife habitat and travel corridors. Important link to Height of the Rockies – Elk Lakes system and each increases the other's long term viability. Unit sits between extensive coal development to east and intensive logging in Bull and White river drainages to the west. Special management designation is important for retaining integrity of inherent natural values, and mitigating impacts of surrounding industrial development (refer to CORE tab in black binder, Polygon 3-3 Sector Comments).	Note: Ecosystem Sector indicates this unit has strong overlap of all protected area criteria (values consist of high recreational; high cultural/heritage; high conservation). Special Management Designation is relative to connectivity requirements with adjacent units. Propose T2 for biodiversity. (Record of Information). T1 Guideline however specified in unit Record of Information, Management Guidelines: Interior Fish-Forestry Guidelines / Riparian and Streamside Management Guidelines / Wildlife Tree Guidelines / Specific plans for red/blue listed species management	CORE 1994 East Kootenay Land Use Plan, Polygon 3-3 Record of Information + T1 Guideline.
C23	RMZ C-E01: PC E195, E210, E215	Biodiversity – General	1. Maintain regional connectivity between SRMZ unit C-S01 and Elk Lakes Provincial Park 2. Maintain riparian zone attributes 3. Protect and enhance rangeland features 4. Retain attributes for old growth dependent species and fur bearers	1.1 Apply connectivity guidelines – Chapter 3.3 3.1 Define Desired Plant Communities (DPC) and means to achieve them. 3.2 Develop and implement an access management plan for road and trail deactivation within the context of Coal ERDZ designation 4.1 Complete the Elk Valley Riparian Assessment Project funded by CBFWCP to survey riparian habitat. Develop a riparian rehabilitation	KBLUP IS: Appendix 3, Page 32

LU #	**Drainage** (if applicable)	**Topic**	**Key resource values**	**Management direction** (existing or recommended)	**Reference (Source)** *(Document, date, section and/or pages)*
				plan.	
C23	CORE polygon 3-2	Biodiversity – General	Very high wildlife values. Fording River and it's tributaries have high value riparian, recreation and wildlife areas. Important sheep winter ranges. Unit defined by high value coal lands in Upper Elk Dedicated designation.	T1 Guideline: Interior Fish-Forestry Guidelines / Riparian and Streamside Management Guidelines / Wildlife Tree Guidelines / Specific plans for red/blue listed species management	CORE 1994 East Kootenay Land Use Plan, Polygon 3-2 Record of Information + T1 Guideline
C23	CORE polygon 3-2; 3-3	Biodiversity – Old Growth	Polygon 3-3: Remnant old growth	T1 Guidelines: Old growth dependent species FENs / Interior Fish-Forestry-Wildlife Guidelines / Regional Wildlife Habitat Guidelines.	CORE 1994 East Kootenay Land Use Plan, Polygon 3-2; 3-3 Records of Information + T1 Guideline.
C23	CORE polygon 3-2; 3-3	Biodiversity – Natural Grasslands	Polygon 3-2: Rocky Mtn Fescue – one rare occurrence Polygon 3-2, 3-3: Areas of NDT5-Alpine tundra and sub alpine parkland.	T1 Guideline: Weed control / Maintenance of riparian habitats / Grazing management guidelines/ Off-road vehicle control / Monitoring of range condition and trend in terms of domestic and wildlife grazers	CORE 1994 East Kootenay Land Use Plan, Polygon 3-2; 3-4 Records of Information, T1 Guideline + Natural Disturbance Type mapping.
C23	Grave Prairie Wildlife Range Complex	Ungulates – Elk	Grave Prairie Wildlife Range Complex is critical elk winter and spring habitat, designated for Intensive Wildlife Management (Category 1). Biophysical Units: • Class 1 - wildlife winter habitat (elk, sheep, moose, goat, mule deer) • Class 2 – mule deer and sheep winter habitat known / suspected mineral licks. This Range Complex is located in LU C38 and C23; C38 contains 2 known mineral licks (refer to Elk-Flathead Operational Wildlife Plan Map and Cross Reference in the LU Summary background information binder).	Wildlife management is recommended as the dominant use. A combination of the following general habitat enhancement activities would be intensively applied to these areas: -Integrated local resource use planning; -Critical habitat identification and protection; -Exploration/mining reclamation; -Impact management activities negotiated under the Mine Development Review Process; -Logging, burning, grazing; -Herbicide, fertilizer treatment; -Slash/brush control, cultivation; -Access planning and management; -Collision mortality management (fencing, underpass, snow clearing); -Winter feeding (restricted).	Elk-Flathead Operational Wildlife Plan. Prepared Jointly by the Planning and Assessment Branch and Cranbrook Wildlife Branch, MOE. December, 1987. Page 13, and Appendix 1, Page 1-2
C23	Upper Elk/ Greenhills/ Fording Wildlife Range	Ungulates – Elk	Upper Elk/Greenhills/ Fording Wildlife Range Complex is elk winter and spring habitat designated for Active Wildlife Management (Category 2). Biophysical Units:	Wildlife management would be given equal consideration in specific areas. A combination of the following general management and enhancement techniques would be actively pursued in an interated resource management strategy:	Elk-Flathead Operational Wildlife Plan. Prepared Jointly by the Planning and Assessment Branch and Cranbrook Wildlife Branch, MOE. December, 1987. Page 13,

LU #	Drainage (if applicable)	Topic	Key resource values	Management direction (existing or recommended)	Reference (Source) *(Document, date, section and/or pages)*
	Complex		• Class 2 – elk, moose, goat winter winter habitat. • Class 3 – all ungulate species winter habitat • Class 3 – all ungulate species summer range This Range Complex is located in LU: C21, C22, C23 and C38; 1 known mineral lick is located in C21 and 1 known lick is located in C22 (refer to Elk-Flathead Operational Wildlife Plan Map and Cross Reference in the LU Summary background information binder).	-Logging which could benefit/complement wildlife; -Integated silvicultural practices; -Exploration/mining reclamation; -Access planning; -Impact management activities negotiated through the Mine Development Review Process	and Appendix 1, Page 1-3.
C23	West Side Wildlife Range Complex	Ungulates – Bighorn Sheep	West Side Wildlife Range Complex is critical bighorn sheep winter and spring habitat, designated for Intensive Wildlife Management (Category 1). Biophysical Units: • Class 1 - wildlife winter habitat (elk, sheep, moose, goat, mule deer). • Class 2 – mule deer and sheep winter habitat known / suspected mineral licks. This Range Complex is located in LU: C22 and C23 and includes Quarry, Forsyth, Crossing, Boivin and Brule. C22 contains 1 known mineral lick (refer to Elk-Flathead Operational Wildlife Plan Map and Cross Reference in the LU Summary background information binder).	Wildlife management is recommended as the dominant use. A combination of the following general habitat enhancement activities would be intensively applied to these areas: -Integrated local resource use planning; -Critical habitat identification and protection; -Exploration/mining reclamation; -Impact management activities negotiated under the Mine Development Review Process; -Logging, burning, grazing; -Herbicide, fertilizer treatment; -Slash/brush control, cultivation; -Access planning and management; -Collision mortality management (fencing, underpass, snow clearing); -Winter feeding (restricted).	Elk-Flathead Operational Wildlife Plan. Prepared Jointly by the Planning and Assessment Branch and Cranbrook Wildlife Branch, MOE. December, 1987. Page 13, and Appendix 1, Page 1-2.
C23	RMZ C-S01	Ungulates	Ungulate Winter Range (S, EX, X)		KBLUP IS: Ch. 3.5, Page 17-24
C23	RMZ C-S01	Ungulates	1. Maintain abundance of mule deer, white-tailed deer, elk and moose within the sustainable carrying capacity of their habitat. 2. Maintain abundance of regionally significant Rocky Mountain Bighorn Sheep and Rocky Mountain Goat populations in the alpine areas within the sustainable carrying capacity of their	1.1 Develop an access management plan that ensures compatible industrial and recreational activities. 2.1 Regulate ATV use in alpine areas and undertake zoning for recreation use. ***2.2 Sulphur Creek mineral lick designated***	KBLUP IS: Appendix 3, Page 4

LU #	Drainage (if applicable)	Topic	Key resource values	Management direction (existing or recommended)	Reference (Source) *(Document, date, section and/or pages)*
			habitat		
C23	RMZ C-E01: PC E195, E210, E215	Ungulates	Maintain abundance of elk, moose, mule deer, white tailed deer, Rocky Mountain Goats and Rocky Mountain Bighorn Sheep within the sustainable carrying capacity of their habitat.	Explore options for managing moose winter range on private lands within riparian habitats including: -conservation easements with private land owners; and -potential land purchase of class 1 winter range.	KBLUP IS: Appendix 3, Page 33
C23	CORE polygon 3-2, 3-3	Ungulates	Polygon 3-3: Ungulate Winter Range. Unit supports quality range for sheep and goats. Contains one of the few unroaded drainages in the Elk River system (Brule Creek-a rare north-south valley) and several of the headwaters of drainages which are undeveloped. Important for summer and fall use by moose, bear and deer. (Refer to black binder CORE tab: Polygon 3-3 Sector Comments). Polygon 3-2: Important sheep winter range	T2 Guideline applies to ungulate winter range throughout unit: -Manage for optimal mix of thermal cover, snow interception and browse production (habitat adjacency key). -Appropriate mix of silvicultural systems and treatments to maintain habitats.	CORE 1994 East Kootenay Land Use Plan, Polygon 3-2, 3-3 Records of Information, T2 Guideline.
C23		Wide ranging carnivores	Grizzly bear values.		Commercial Hunting & Fishing Focus Group session, March 27, 2002.
C23		Wide ranging carnivores	Priority 1 (and some Priority 2) Grizzly Bear Habitat		KBLUP IS: Ch 3.4, Pages 8-17
C23	RMZ C-S01	Wide ranging carnivores	1. Maintain sufficient habitat to ensure Grizzly Bear populations are maintained or enhanced 2. Maintain sufficient habitat to ensure wolverine populations are maintained or enhanced. 3. Ensure the existing wolf populations are maintained or enhanced.	1.1 Develop and implement an avalanche chute habitat plan for grizzly bears in this unit. 1.2 Complete the Upper Elk River Grizzly Bear Inventory Project. 2.1 Information being generated through an inventory project in the Revelstoke/Golden areas to provide management opportunities. 3.1 Maintain sufficient prey habitat and populations.	KBLUP IS: Appendix 3, Page 4
C23	CORE polygon 3-3	Wide ranging carnivores	Supports high use migration routes; healthy populations of fur bearers; quality grizzly bear habitat; internationally significant migration route for recovering wolf population between protected areas in Montana to Canadian federal parks system to the north. (Refer to black binder CORE tab: Polygon 3-3 Sector Comments).	T2 Guideline: -Seasonal feeding and breeding habitats protected; -Conservation of seasonal feeding and breeding areas; silvicultural treatments to favour food production; -Road densities minimal and access management coordinated to avoid conflicts with habitat use. -Minimal human habitation and no sanitary landfills. -Predator control only under special circumstances. -Special grazing management to protect carnivore values.	CORE 1994 East Kootenay Land Use Plan, Polygon 3-3 Record of Information, T2 Guideline.

LU #	Drainage (if applicable)	Topic	Key resource values	Management direction (existing or recommended)	Reference (Source) *(Document, date, section and/or pages)*
C23	CORE polygon 3-2	Wide ranging carnivores	Concern for black bears	T1 Guideline: Interior fish-forestry guidelines / FENs / Access control / Landfill regulations / Management of prey species / Maintenance of seasonal feeding and breeding areas / Harvesting regulations	CORE 1994 East Kootenay Land Use Plan, Polygon 3-2 Record of Information, T1 Guideline
C23	RMZ C-E01: PC E195, E210, E215	Fisheries	1. Maintain wild fish stocks and habitats for Cutthroat and Bull Trout in the Elk River	**1.1 Review angling guide situation on Elk River to address overcrowding.** 1.2 Review existing management and habitat conservation strategies 1.3 Undertake an assessment of fish and fish habitat 1.4 Develop restoration plan for fish and fish habitat	KBLUP IS: Appendix 3, Page 33
C23	CORE polygon 3-3	Fisheries	Fisheries values in Cummins Creek	T1 Guideline: Interior Fish-Forestry Guidelines / Riparian and Streamside Management Guidelines / Maintenance of spawning and rearing habitat	CORE 1994 East Kootenay Land Use Plan, Polygon 3-3 Record of Information, T1 Guideline.
C23	CORE polygon 3-2	Fisheries	Fishery values in Alexander Creek and the Fording and Elk Rivers.	T2 Guideline: -Minimal human-caused sedimentation. -Protection of streamside and riparian habitats; no roads in riparian without special permission, however, stream crossing normally acceptable. -Management for large organic debris. -Watershed sensitivity and ECA analysis prior to development. -Protection of spawning and rearing habitat. -Reclamation and hydrologic stabilization where necessary. -Assume level one guidelines in place where level two's are applied.	CORE 1994 East Kootenay Land Use Plan, Polygon 3-2 Record of Information, T2 Guideline
C23	RMZ C-E01	Mining	Fording area	Priority management emphasis is on the coal resources and their exploration, development and production. Guidelines for C-E01 are provided according to topic i.e. access, recreation, biodiversity, ungulates and fisheries.	KBLUP IS: Ch 3.14, Pages 78-79
C23	CORE polygon 3-3	Mining	Extensive mineral tenures throughout. Kimberlite has been discovered.	T1 Guideline: Mines Act / Health, Safety and Reclamation Code / Mineral Tenure Act / Mine Development Assessment Act / Water Act / Fisheries Act / Forest Act / Guidelines for Mineral Exploration / Guidelines for Coal Exploration / Petroleum and Natural Gas Act / Geothermal Resources Act / other related regulations and guidelines	CORE 1994 East Kootenay Land Use Plan, Polygon 3-3 Record of Information + T1 Guideline

LU #	Drainage (if applicable)	Topic	Key resource values	Management direction (existing or recommended)	Reference (Source) *(Document, date, section and/or pages)*
C23	CORE polygon 3-2	Mining	Unit defined by high value coal lands in the Upper Elk River valley. Includes major coal deposits. Two operating coal mines in the unit. Coal dedicated designation.	T1 Guideline: Mines Act / Health, Safety and Reclamation Code / Mineral Tenure Act / Mine Development Assessment Act / Water Act / Fisheries Act / Forest Act / Guidelines for Mineral Exploration / Guidelines for Coal Exploration / Petroleum and Natural Gas Act / Geothermal Resources Act / other related regulations and guidelines	CORE 1994 East Kootenay Land Use Plan, Polygon 3-2 Record of Information + T1 Guideline. Note: For additional information refer to black binder, CORE tab, Polygon 3-2 Sector Comments.
C23	CORE polygon 3-3	Settlement/ Industrial-Commercial	Settlement and General Industrial/Commercial Uses are not acceptable uses.		CORE 1994 East Kootenay Land Use Plan, Polygon 3-3 Record of Information.
C23	CORE polygon 3-2	Unacceptable Uses	Settlement is not an acceptable use.		CORE 1994 East Kootenay Land Use Plan, Polygon 3-2 Record of Information.
C24	Iron/Lizard PAS Unit 48	1993 Best PAS Areas	Area extends from valley floor to the alpine and includes all of the Lizard Range and the drainage of Iron Creek. PAS Value: Iron Creek and the Lizard Range is a strategically located core area that connects to the Bull River, the Elk River and Coyote Creek (via North Galbraith Creek and Top of the World Provincial Park). Further connections link to the Wigwam and Flathead Rivers. Diversity: Supports moose, elk, mule deer, white tailed deer, mountain goat (including wintering populations), and black and grizzly bears. Connects to Bull River and Elk River, and to Coyote Creek via North Galbraith Creek and TOW Prov. Pk. Contributes to Bull River cutthroat trout fishery. Covered under a Wildlife Act Vehicular Access Hunting Closure. Viability: This unit is large enough (37,545 ha), and has a sufficiently complete watershed to be viable, particularly in conjunction with PAS Unit 17, North Galbraith Creek.	1993 recommended Priority Two area for protection	Best P.A.S. Report. Identification, Evaluation and Ranking of Areas within the Kootenay Region that meet the Protected Areas Strategy Goals and Criteria. Prepared by Conservation, Recreation and Cultural Heritage Subgroups of the Kootenay Regional Protected Areas Team (RPAT). November, 1993. Unit 48.

LU #	Drainage (if applicable)	Topic	Key resource values	Management direction (existing or recommended)	Reference (Source) *(Document, date, section and/or pages)*
			Naturalness in 1993: Less than 25% disturbed by roads, a powerline and ski hill development.		
C24		Agriculture	Moderate range values. Range agreements: One cattle grazing license overlaps with LU C20; Three grazing permits for cattle; One grazing permit for guide outfitter horses overlaps with LU C15 + C17 Total 220 AUMs attributable to LU C24		Cranbrook Forest District Recreation Access Plan. March, 2000. LU C24
C24	C24 is in the Fernie Range Unit; Spruce/Olsen Range Unit; and Wigwam Range Unit	Agriculture	Fernie Range Agreement Holders: Clifford Beese- 21 AUMs Les Bryant- 53 AUMs Terry Polacik- 34 AUMs Spruce/Olsen Range Agreement Holders: Les Bryant- 102 AUMs Lloyd Phillips- 137 AUMs	Fernie Range Unit includes: LU C15 (part), C19 (part), C24 (part) Spruce-Olsen Range Unit includes: LU C24 (part) South edge of LU C24 (west of the Elk River) extends into the Wigwam Range Unit.	Cranbrook Forest District Range Unit Map and Range Agreement Holder information (refer to Range tab in black binder)
C24	CORE polygon 2-1, 2-9	Agriculture		Polygon 2-1- Potential for increased agricultural activity. Intent is to pursue the possibility (CORE, East Kootenay Regional Table, Volume 3, Part B Management Guidelines, Agriculture Notes, AG2). Outdoor Recreation non-motorized sector expresses concern with regard to expansion of cattle grazing in this unit, however whole heartedly supports CRMP's and the work of the EK Trench Agriculture/Wildlife Committee (Refer to Sector Comments, Polygon 2-1 Record of Information). Polygon 2-1, 2-9: T1 Guideline-Grazing tenures	CORE 1994 East Kootenay Land Use Plan, Polygon 2-1, 2-9 Records of Information + T1 Guideline.
C24	Lladner Creek & Spruce Creek	Access Management	Mineral licks on the west side of the Elk River near Hosmer (Lladner and Spruce Creeks).	Access restrictions are required as off road vehicles are driving on the mineral licks.	Commercial Hunting & Fishing Focus Group session. March 27, 2002.
C24	Tunnel Creek	Recreation	Illegal cabin at Tunnel Creek is being used commercially.	Should be addressed.	Commercial Hunting & Fishing Focus Group session. March 27, 2002.
C24	Lower Elk River	Recreation	Washroom facilities are needed along the River due to heavy guided angling use.		Recreational Hunting & Fishing Focus Group session. March 27, 2002.

LU #	Drainage (if applicable)	Topic	Key resource values	Management direction (existing or recommended)	Reference (Source) *(Document, date, section and/or pages)*
C24	Fernie Alpine Resort	Recreation	Sochers (spp?) Trail construction should not be allowed due to wildlife impacts resulting from potential heavy tourist use of the trail.		Recreational Hunting & Fishing Focus Group session. March 27, 2002.
C24	RMZ C-I01	Recreation	Maintain recreation opportunities from roaded to semi-primitive non-motorized.		KBLUP IS: Appendix 3, Page 16
C24	RMZ C-I01	Recreation-Commercial Tourism	Maintain and enhance opportunities for resorts and commercial backcountry recreation	As necessary provide for the expansion of Fernie and Sparwood ski areas, and for expansion of CBR activities at Island Lake Lodge. These actions will be subject to consideration of conservation values, municipal and regional planning, and the provincial land use charter and goals through a referral process.	KBLUP IS: Appendix 3, Page 16
C24	CORE polygon 2-1, 2-9	Recreation-Commercial Tourism	Polygon 2-1: Fernie Alpine Resort and Island Lake Lodge are in the unit. T1 guideline is conditional on future development of facilities and services with special recognition of priority tourism values.	T1 Guideline: -maintain traditional use access; -consultation and consensus on access issues (mining referrals would not normally be routed through tourism unless there was a substantial wilderness impact); -consultation on potential alternatives through resource extraction.	CORE 1994 East Kootenay Land Use Plan, Polygon 2-1, 2-9 Record of Information + T1 Guideline
C24		Recreation	Backcountry Recreation Management as per ROS.		KBLUP IS: Ch. 3.9, Page 54-57
C24	Various	Recreation-Visuals	Class 1 Scenic Corridor		KBLUP IS: Ch. 3.8, Page 52-54
C24	CORE polygon 2-1, 2-9	Recreation-Visuals	Polygon 2-1: Visuals: Island Lake Lodge, Fernie Alpine Resort, highway views Tourism Visuals : High cultural values – White Spruce Lumber, Hartley Pass	T1 Guideline: General Visuals-smoke management guidelines / Visual Quality Objectives guidelines apply (implying restrictions on timber volume). Tourism Visuals-management of high tourism value viewscapes for some enhanced analysis and landscape design (implying no change in timber volume).	CORE 1994 East Kootenay Land Use Plan, Polygon 2-1, 2-9 Records of Information + T1 Guideline
C24	CORE polygon 2-1	Recreation – Sense of Solitude		T1 Guideline: -Local agreement preferred -Full range of mechanized and non-mechanized access/activities can be allowed	CORE 1994 East Kootenay Land Use Plan, Polygon 2-1 Record of Information + T1 Guideline
C24	CORE polygon 2-9	Recreation – Sense of Solitude		T2 Guideline: -Local agreement preferred -Sensitivity to Solitude experiences -Enhanced management related to timing, seasonality, mode and distribution of mechanized access/activities, recognize existing and potential future use for tenure holders and consider mechanized	CORE 1994 East Kootenay Land Use Plan, Polygon 2-9 Record of Information + T2 Guideline

LU #	Drainage (if applicable)	Topic	Key resource values	Management direction (existing or recommended)	Reference (Source) *(Document, date, section and/or pages)*
				recreational users.	
C24	Iron/Lizard PAS Unit 48	Cultural Heritage	Represents a significant diversity of themes: oil and gas exploration, pre-contact native economic activities, native trail systems, rural development patterns and forestry. No recorded sites except for a regionally significant lithic scatter on northern boundary.		Best P.A.S. Report. Identification, Evaluation and Ranking of Areas within the Kootenay Region that meet the Protected Areas Strategy Goals and Criteria. Prepared by Conservation, Recreation and Cultural Heritage Subgroups of the Kootenay Regional Protected Areas Team (RPAT). November, 1993. Unit 48.
C24	CORE polygon 2-1	Cultural Heritage		T1 Guideline: **Planning:** ID cultural heritage resource (see FPC); Development without preparation of cultural heritage impact assessment. **Access:** restrictions unlikely Directional signage to cultural/heritage sites permitted. Signage re: visitor behaviour and to ID site as significiant cultural/heritage feature desired. Land trades possible to create access across private lands. **Facilities:** Major construction permitted at cultural heritage resource sites. Buffering not required. Adaptive reuse of appropriate heritage structures without restriction **Activities:** restrictions unlikely Resource extraction or harvesting unlikely to be restricted for cultural heritage values. Environmental protection opportunities for special exemption from mining reclamation.	CORE 1994 East Kootenay Land Use Plan, Polygon 2-1 Record of Information + T1 Guideline.
C24	CORE polygon 2-9	Cultural Heritage		T2 Guideline: **Planning:** Public notification and/or review required within development planning process. In the case of highly sensitive or valued sites, extensive public review likely. Mitigation of impacts, protection of resources, and/or recovery of cultural heritage resource before development, may be required.	CORE 1994 East Kootenay Land Use Plan, Polygon 2-9 Record of Information + T2 Guideline.

LU #	Drainage (if applicable)	Topic	Key resource values	Management direction (existing or recommended)	Reference (Source) *(Document, date, section and/or pages)*
				Access: Based on local agreements. Guidelines regarding modes/routes of access and levels of use may be required in case of highly sensitive or valued sites. Fencing may be required. Directional signage may be restricted or not allowed. Some buffering from access routes to minimize vandalism. Sensitive sites to be well buffered. Roads to avoid contextual areas. **Facilities:** Restrictions on construction of facilities within contextual areas. In sensitive areas, no development permitted. Temporary site protection may be required. Preservation and reuse of related heritage sites may be permitted under controlled conditions. **Activities** High control level on use of fire and chemicals to protect cultural heritage sites. Activities and party size may be restricted. Establishment of a cultural heritage impact assessment process, including recognized cultural heritage advisors. Development plans to be referred to Community Heritage Commission (or equivalent).	
C24	PC E005, E015, E565, E558, E026, E030, E035, E045, E060	Watershed	Class 1 Domestic Watershed		KBLUP IS: Ch. 3.7, Page 30-52
C24	PC: E005, E015, E558, E026, E035, E036, E045, E535	Watershed	Class 2 Domestic Watershed		KBLUP IS: Ch. 3.7, Page 30-52
C24	PC: E005, E040, E530, E531	Watershed	Class 3 Domestic Watershed		KBLUP IS: Ch. 3.7, Page 30-52
C24	PC: E015, E030	Watershed	Fernie (Fairy Creek), Fernie Alpine Resort (Boardman Creek) Community Watersheds		KBLUP IS: Ch. 3.7, Page 30-52
C24	South area of LU	Biodiversity – Rare and	Fisher - Blue listed (vulnerable) Habitat: dense, late seral coniferous or mixed wood.		Listed Vertebrate and Vascular Plant Species Occurring in the

LU #	Drainage (if applicable)	Topic	Key resource values	Management direction (existing or recommended)	Reference (Source) *(Document, date, section and/or pages)*
		Endangered Species	Distribution: may currently occupy the southeast corner of B.C. in low densities, and at high elevation. Historical range includes the west and southeast portions of the Cranbrook Forest District.		Cranbrook Forest District and in the Southern Rocky Mountain Management Plan Area. March, 2002. Page 11.
C24	South area of LU	Biodiversity – Rare and Endangered Species	Badger (Taxidea taxus) - Red listed (threatened or endangered) Habitat: non-forest and open Douglas-fir Distribution: occur in the southern half of the Cranbrook Forest District, in the Kootenay River Drainage and in the Elk Valley.		Listed Vertebrate and Vascular Plant Species Occurring in the Cranbrook Forest District and in the Southern Rocky Mountain Management Plan Area. March, 2002. Page 12.
C24		Biodiversity	Riparian areas and connectivity corridors	Should be addressed	Commercial Hunting & Fishing Focus Group session, March 27, 2002.
C24		Biodiversity Emphasis	Low Biodiversity Emphasis		KBLUP IS: Ch. 3.2, Page 3-6 Appendix 3 - Appendix C
C24		Biodiversity – Connectivity	All or portion of unit is important for regional connectivity		KBLUP IS: Ch. 3.3, Page 6-8
C24	CORE polygon 2-1	Biodiversity – General	The west slopes of the lower Elk valley above the towns of Fernie and Sparwood. Includes ICH (cedar hemlock) variants that have resulted from wet conditions along the Lizard Range. Part of the Border Ranges Ecosection.	T1 Guideline: Interior Fish-Forestry Guidelines / Riparian and Streamside Management Guidelines / Wildlife Tree Guidelines / Specific plans for red/blue listed species management	CORE 1994 East Kootenay Land Use Plan, Polygon 2-1 Record of Information + T1 Guideline.
C24	RMZ C-I01:	Biodiversity – General	1. Maintain regional connectivity between the Wigwam and Top of the World Provincial Park and the Elk and Bull river watersheds (linking SRMZ units C-S01, CS02 and C-S06), to contribute to ecosystem representation (ICHmk1, ICHmw2); and serve as habitat linkage for the seasonal migration of ungulates. 2. Maintain integrity of alpine environments	1.1 Apply connectivity guidelines within the regional connectivity corridor as per Chapter 3.3 2.2 through access management as per guidelines, Chapter 3.12	KBLUP IS: Appendix 3, Page 17
C24	CORE polygon 2-9	Biodiversity – General	Coal dedicated designation.	T2 Guideline: -Enhanced FENs; riparian protection; wide corridors; significant OG protection; -Landscape habitat mosaic is diverse in stand, age classes, types, structures and composition.	CORE 1994 East Kootenay Land Use Plan, Polygon 2-9 Record of Information + T2 Guideline.

LU #	Drainage (if applicable)	Topic	Key resource values	Management direction (existing or recommended)	Reference (Source) *(Document, date, section and/or pages)*
				-Rare and unique habitats and species protected. -Providing habitat for regional inter-protected area linkage corridors and buffers is a part of management objectives for area. -Minimize expansion of settlement or industrial/commercial use -Restoration/rehabilitation of disturbed sites	
C24	RMZ C-E02	Biodiversity – General	1. Protect and enhance rangeland features 2. Retain attributes for old growth dependent species and fur bearers	1.1 Define Desired Plant Communities (DPC) and means to achieve. 1.2 Develop and implement an access management plan for road and trail deactivation within the context of Coal ERDZ designation 2.1 Complete the Elk Valley Riparian Assessment Project funded by CBFWCP to survey riparian habitat. Develop a riparian rehabilitation plan.	KBLUP IS: Appendix 3, Page 32
C24	Cedar Valley/Island Lake	Biodiversity – Old Growth	Cedar Valley/Island Lake privately owned old growth is highly valued by Elk Valley residents.	Plan should acknowledge the importance of this parcel of old growth. A mechanism is needed for the long term protection of old growth on private land.	Local Government Focus Group session. April 25, 2002.
C24	CORE polygon 2-1, 2-9	Biodiversity – Old Growth		T1 Guidelines: Old growth dependent species FENs / Interior Fish-Forestry-Wildlife Guidelines / Regional Wildlife Habitat Guidelines.	CORE 1994 East Kootenay Land Use Plan, Polygon 2-1, 2-9 Records of Information + T1 Guideline.
C24	RMZ C-I01	Biodiversity – Natural Grasslands		Fire Maintained Ecosystem Guidelines apply.	KBLUP IS: Chapter 3.10, Pages 58-65
C24	CORE polygon 2-1, 2-9	Biodiversity – Natural Grasslands	Areas of NDT5-Alpine tundra and sub alpine parkland.	T1 Guideline: Weed control / Maintenance of riparian habitats / Grazing management guidelines/ Off-road vehicle control / Monitoring of range condition and trend in terms of domestic and wildlife grazers	CORE 1994 East Kootenay Land Use Plan, Polygon 2-1, 2-9 Records of Information, T1 Guideline + Natural Disturbance Type mapping
C24	Lower Elk Wildlife Range Complex	Ungulates – Elk	Lower Elk Wildlife Range Complex is elk winter and spring habitat designated for Active Wildlife Management (Category 2). Biophysical Units: • Class 2 – elk, moose, goat winter winter habitat. • Class 3 – all ungulate species winter habitat. • Class 3 – all ungulate species summer range	Wildlife management would be given equal consideration in specific areas. A combination of the following general management and enhancement techniques would be actively pursued in an interated resource management strategy: -Logging which could benefit/complement wildlife; -Integated silvicultural practices; -Exploration/mining reclamation; -Access planning;	Elk-Flathead Operational Wildlife Plan. Prepared Jointly by the Planning and Assessment Branch and Cranbrook Wildlife Branch, MOE. December, 1987. Page 13, and Appendix 1. Page 1-3.

LU #	**Drainage** (if applicable)	**Topic**	**Key resource values**	**Management direction** (existing or recommended)	**Reference (Source)** *(Document, date, section and/or pages)*
			This Range Complex is located in LU C24 (refer to Elk-Flathead Operational Wildlife Plan Map and Cross Reference in the LU Summary background information binder).	-Impact management activities negotiated through the Mine Development Review Process.	
C24	Mt. Broadwood/ Wigwam Wildlife Range Complex	Ungulates – Bighorn sheep and Elk	Mt. Broadwood/Wigwam Wildlife Range Complex is critical elk and sheep winter and spring habitat, designated for Intensive Wildlife Management (Category 1). Biophysical Units: • Class 1 - wildlife winter habitat (elk, sheep, moose, goat, mule deer). • Class 2 – mule deer and sheep winter habitat known / suspected mineral licks. This Range Complex is located in LU: C24, C15, C13/34 (Sheep Mtn); 3 known mineral licks occur within C15 and 2 known licks are in close proximity to the boundary between C15 and C13 (refer to Elk-Flathead Operational Wildlife Plan Map and Cross Reference in the LU Summary background information binder).	Wildlife management is recommended as the dominant use. A combination of the following general habitat enhancement activities would be intensively applied to these areas: -Integrated local resource use planning; -Critical habitat identification and protection; -Exploration/mining reclamation; -Impact management activities negotiated under the Mine Development Review Process; -Logging, burning, grazing; -Herbicide, fertilizer treatment; -Slash/brush control, cultivation; -Access planning and management; -Collision mortality management (fencing, underpass, snow clearing); -Winter feeding (restricted).	Elk-Flathead Operational Wildlife Plan. Prepared Jointly by the Planning and Assessment Branch and Cranbrook Wildlife Branch, MOE. December, 1987. Page 13, and Appendix 1, Page 1-2.
C24	RMZ C-I01	Ungulates	Ungulate Winter Range (EX, EM, ESMV)		KBLUP IS: Ch. 3.5, Page 17-24
C24	RMZ C-I01	Ungulates	1. Maintain abundance of mule deer, white-tailed deer, elk, moose, Rocky Mountain Bighorn Sheep and Rocky Mountain Goats within the sustainable carrying capacity of their habitat.	1.1 Maintain suitable summer and winter habitats and minimize wildlife displacement by developing an access management plan to ensure compatible industrial and recreational activities as per Access Management Guidelines, Chapter 3.12 1.2 Sustain early seral ungulate habitat by initiating controlled fires. 1.3 Designate mineral lick at Sulphur Creek as a Sensitive Area under the FPC	KBLUP IS: Appendix 3, Page 17
C24	CORE polygon 2-1	Ungulates	Ungulate Winter Range	T2 Guideline: -Manage for optimal mix of thermal cover, snow interception and browse production (habitat adjacency key). -Appropriate mix of silvicultural systems and treatments to maintain habitats.	CORE 1994 East Kootenay Land Use Plan, Polygon 2-1 Record of Information, T2 Guideline

LU #	Drainage (if applicable)	Topic	Key resource values	Management direction (existing or recommended)	Reference (Source) *(Document, date, section and/or pages)*
C24	RMZ C-E02	Ungulates	Maintain abundance of elk, moose, mule deer, white tailed deer, Rocky Mountain Goats and Rocky Mountain Bighorn Sheep within the sustainable carrying capacity of their habitat.	Explore options for managing moose winter range on private lands within riparian habitats including: -conservation easements with private land owners; and -potential land purchase of class 1 winter range.	KBLUP IS: Appendix 3, Page 33
C24	CORE polygon 2-9	Ungulates	Ungulate Winter Range	T1 Guideline: -Wildlife harvesting guidelines / TSA harvesting guidelines / specific referrals on the ground.	CORE 1994 East Kootenay Land Use Plan, Polygon 2-9 Record of Information, T1 Guideline.
C24		Wide ranging carnivores	Priority 2 (and minor amounts of Priority 1) Grizzly Bear Habitat		KBLUP IS: Ch 3.4, Pages 8-17
C24	RMZ C-I01	Wide ranging carnivores	1. Maintain sufficient seasonal habitat to retain the existing Grizzly Bear population. 2. Ensure the existing wolf populations utilizing the Bull river drainage are maintained or enhanced.	1.1 Sustain high productivity berry patches by – initiating controlled fires; and using no herbicides in high productivity berry patches. 2.1 Maintain sufficient prey habitat and prey populations.	KBLUP IS: Appendix 3, Page 17
C24	CORE polygon 2-1	Wide ranging carnivores	Elk valley is an important link between Glacier/Flathead system and Kananaskis/Jasper system for wolves.	T1 Guideline: Interior fish-forestry guidelines / FENs / Access control / Landfill regulations / Management of prey species / Maintenance of seasonal feeding and breeding areas / Harvesting regulations	CORE 1994 East Kootenay Land Use Plan, Polygon 2-1 Record of Information, T1 Guideline.
C24	CORE polygon 2-9	Wide ranging carnivores		T2 Guideline: -Seasonal feeding and breeding habitats protected; -Conservation of seasonal feeding and breeding areas; silvicultural treatments to favour food production; -Road densities minimal and access management coordinated to avoid conflicts with habitat use. -Minimal human habitation and no sanitary landfills. -Predator control only under special circumstances. -Special grazing management to protect carnivore values.	CORE 1994 East Kootenay Land Use Plan, Polygon 2-9 Record of Information, T2 Guideline.
C24	Headwaters of the Flathead and Morrissey Creek linkage with the Lizard Range and Lizard Creek valley	Wide ranging carnivores	Value: connectivity. Carnivore conservation principle (3): maintain regional connectivity with landscape linkages.	Identify and secure protection of key linkages for carnivores along Highway 3. 'Linkage- zone' model on four attributes of a landscape for grizzly bear: disturbance from human development; disturbance from roads and trails; value of hiding cover; and value of riparian habitats. Possible linkages (Fig 16, p47): 1.) between Elko and Fernie, connecting the headwaters of the Flathead and Morrissey Creek east to southeast of Hwy 3 to the	J.Weaver, The Transboundary Flathead, British Columbia and Montana: A Critical Landscape for Carnivores in the Rocky Mountains. 2001, p46-48. Fig. 16 & 17.

LU #	**Drainage** (if applicable)	**Topic**	**Key resource values**	**Management direction** (existing or recommended)	**Reference (Source)** *(Document, date, section and/or pages)*
	across Hwy 3.			Lizard Range and Lizard Creek valley to the west–northwest; 2.) between Hosmer and Sparwood, connecting several ridges just north of the headwaters of the Flathead to the important west side of the Elk Valley via Lladner and McCool Creeks.	
C24		Wide ranging carnivores	Value: security Carnivore conservation principle (2): provide security from excessive mortality with networks of core reserves and other precautionary measures The Elk River area, particularly the western and northern sections provides important habitat and security for carnivores and likely serves as a crucial link in maintaining connectivity through the Rocky Mountains (The Transboundary Flathead, p 39).	- Provide a network of seasonal or permanent security zones throughout the transboundary Flathead basin and elsewhere in the new 'Southern Rocky Mountain Conservation Area'. Consideration of focal species' key habitats will be used to guide the strategic identification and delineation of security zones.	J.Weaver, The Transboundary Flathead, British Columbia and Montana: A Critical Landscape for Carnivores in the Rocky Mountains. 2001, p45.
C24	Elk River	Fisheries	Cutthroat trout and Elk River fishery at risk due to angling guide over use.	Address through changes to Fisheries regulations.	March/April Focus Group sessions: Commercial Hunting and Fishing; Recreational Hunting and Fishing; Local Government; and Tourism
C24	RMZ C-I01	Fisheries	Maintain wild fish stocks and habitats for Cutthroat and Bull Trout in the Elk River	1.1 **Review angling guide situation on Elk River to address overcrowding.** 1.2 Review existing management and habitat conservation strategies. 1.3 Undertake an assessment of fish and fish habitat Develop restoration plan for fish and fish habitat	KBLUP IS: Appendix 3, Page 17
C24	RMZ C-E02	Fisheries	Maintain wild fish stocks and habitats for Cutthroat and Bull Trout in the Elk River	**1.5 Review angling guide situation on Elk River to address overcrowding.** 1.6 Review existing management and habitat conservation strategies. 1.7 Undertake an assessment of fish and fish habitat 1.8 Develop restoration plan for fish and fish habitat	KBLUP IS: Appendix 3, Page 33
C24	CORE polygon 2-1, 2-9	Fisheries	Elk River	T2 Guideline: -Minimal human-caused sedimentation. -Protection of streamside and riparian habitats; no roads in riparian without special permission, however, stream crossing normally	CORE 1994 East Kootenay Land Use Plan, Polygon 2-1, 2-9 Records of Information, T2 Guideline.

LU #	Drainage (if applicable)	Topic	Key resource values	Management direction (existing or recommended)	Reference (Source) *(Document, date, section and/or pages)*
				acceptable. -Management for large organic debris. -Watershed sensitivity and ECA analysis prior to development. -Protection of spawning and rearing habitat. -Reclamation and hydrologic stabilization where necessary. -Assume level one guidelines in place where level two's are applied.	
C24	CORE polygon 1-1	Coal Mining	Crowsnest coalfield • Medium and high value coal lands are located throughout the area east of the Elk River in LU C24. • The high value, exposed coal bearing lands of the Crowsnest coalfield include three areas: Fernie block (73,333 ha) located in LU C17, C19, C24, C38; Corbin area (962 ha) and Tent Mountain area (1,603 ha) (p7) located in C19 • The high value lands of the Fernie block lay along the east half of LU C24 on private land.	Definitions: • High value coal lands include the area from the outcrop of the coal bearing strata to its inferred depth limit (p1). • Medium value coal land is a corridor for mining related activities and infrastructure, surrounding the exposed coal bearing strata (high value coal lands) (p1).	Morris, Bob. Resource Estimate: East Kootenay Coalfields, 1994. Pages 1, 4, 7; Fig. 5: E.K. Coal Fields Location Map; and Fig. 7: Coal Value Lands Map. Refer to Black Binder, Coal tab for maps.
C24	RMZ C-E02	Mining	CPR block south of Hosmer. Block of Provincial land surrounded by private Shell lands.	Priority management emphasis is on the coal resources and their exploration, development and production. Guidelines for Coal ERDZ are only provided for C-E01 (Fording area: LU C20, 21, 22, 23, 38). Specific guidelines were not been developed for C-E02 to C-E04.	KBLUP IS: Ch 3.14, Pages 78-79
C24	CORE polygon 2-1, 2-9	Mining	Polygon 2-9 is Coal Dedicated CPR block.	T1 Guideline: Mines Act / Health, Safety and Reclamation Code / Mineral Tenure Act / Mine Development Assessment Act / Water Act / Fisheries Act / Forest Act / Guidelines for Mineral Exploration / Guidelines for Coal Exploration / Petroleum and Natural Gas Act / Geothermal Resources Act / other related regulations and guidelines.	CORE 1994 East Kootenay Land Use Plan, Polygon 2-1, 2-9 Records of Information + T1 Guideline.
C24	CORE polygon 2-9 (RMZ C-E02)	Coal Mining	CPR block.	Values requiring enhanced management (T2 guidelines) include: Wide ranging carnivores; Fisheries; Biodiversity; Sense of Solitude and Heritage/Culture.	CORE 1994 East Kootenay Land Use Plan, Polygon 2-9 Record of Information.
C24	CORE polygon 2-1	Unacceptable Uses	Settlement is not an acceptable use.		CORE 1994 East Kootenay Land Use Plan, Polygon 2-1 Record of Information.

LU #	**Drainage** (if applicable)	**Topic**	**Key resource values**	**Management direction** (existing or recommended)	**Reference (Source)** *(Document, date, section and/or pages)*
C24	CORE polygon 2-9	Unacceptable Uses	Settlement and General Industrial/Commercial are not acceptable uses.		CORE 1994 East Kootenay Land Use Plan, Polygon 2-9 Record of Information.
C25	Iron/Lizard PAS Unit 48	1993 Best PAS Areas	Area extends from valley floor to the alpine and includes all of the Lizard Range and the drainage of Iron Creek. PAS Value: Iron Creek and the Lizard Range is a strategically located core area that connects to the Bull River, the Elk River and Coyote Creek (via North Galbraith Creek and Top of the World Provincial Park). Further connections link to the Wigwam and Flathead Rivers. Diversity: Supports moose, elk, mule deer, white tailed deer, mountain goat (including wintering populations), and black and grizzly bears. Connects to Bull River and Elk River, and to Coyote Creek via North Galbraith Creek and TOW Prov. Pk. Contributes to Bull River cutthroat trout fishery. Covered under a Wildlife Act Vehicular Access Hunting Closure. Viability: This unit is large enough (37,545 ha), and has a sufficiently complete watershed to be viable, particularly in conjunction with PAS Unit 17, North Galbraith Creek. Naturalness in 1993: Less than 25% disturbed by roads, a powerline and ski hill development.	1993 recommended Priority Two area for protection.	Best P.A.S. Report. Identification, Evaluation and Ranking of Areas within the Kootenay Region that meet the Protected Areas Strategy Goals and Criteria. Prepared by Conservation, Recreation and Cultural Heritage Subgroups of the Kootenay Regional Protected Areas Team (RPAT). November, 1993. Unit 48.
C25		Agriculture	Low range values. Range agreements: One cattle grazing license overlaps with LU C34; One grazing permit for guide outfitter horses overlaps with LU C26 Total 140 AUMs attributable to LU C25		Cranbrook Forest District Recreation Access Plan. March, 2000. LU C25.
C25		Agriculture	Burton North/Upper Sand Range Agreement	If marked with GT, the Range Agreement Area matches the Guide	Cranbrook Forest District Range

LU #	Drainage (if applicable)	Topic	Key resource values	Management direction (existing or recommended)	Reference (Source) *(Document, date, section and/or pages)*
			Holders: South Country Enterprises 674 AUMs Bull River Range Agreement Holders: GT: Grizzly Basin Outfitters Ltd -63 AUMs CD Reay and Sons Ltd – marginal use along Bull R. GT: Vince Cocciolo - 69 AUMs GT: Bull River Outfitters Ltd - 88 AUMs	Outfitting Territory C25 extends into the Burton Lake, Upper Sand, Rosen, Pickering Hills and Bull River Range Units.	Unit Map and Range Agreement Holder information (refer to Range tab in black binder)
C25	McDermid Creek & Goat Haven	Agriculture	Livestock grazing is reported to be causing environmental damage to high elevation wildlife habitat at McDermid Creek and Goat Haven		Commercial Hunting and Fishing Focus Group session. March 27, 2002.
C25	CORE polygon 19-1	Agriculture	Agriculture sector notes relating to Unit 19-1: 1. All existing range units have extremely high value to the cattle industry. Investments since 1975 include fencing, water developments, corrals, clearing, seeding 2. Grazing systems to maintain/enhance plant community values and wildlife habitat in place 3. CRMP in place on most range units 4. EK Trench Agriculture/Wildlife Committee vegetation monitoring project began in 1992 to determine forage use and diet overlap of cattle and wildlife. (Refer to CORE tab in black binder for Agriculture Sector notes relating to Units 19-1, 19-2, 19-3, 19-5 and 19-6)	Maintain current level of agricultural activity (CORE, East Kootenay Regional Table, Volume 3, Part B Management Guidelines, Agriculture Notes, AG 1) Outdoor Recreation non-motorized sector expresses concern with regard to expansion of cattle grazing in this unit, however whole heartedly supports CRMP's and the work of the EK Trench Agriculture/Wildlife Committee. T1 Guideline-Grazing tenures	CORE 1994 East Kootenay Land Use Plan, Polygon 19-1 Record of Information + T1 Guideline
C25		Agriculture	Domestic sheep	Threaten the native bighorn sheep population. No range permits should be issued for domestic sheep and the Elko ice cream stand should not be permitted to have them.	Commercial Hunting & Fishing Focus Group session. March 27, 2002.
C25	Various	Access Management	1. Mineral licks at Brewster Creek, Big Sand Creek, Whimster Creek 2. Critical habitat at Tunnel to Sand Creek; Sand Creek to Iron Creek; Thunder Lake 3. Sand Creek to Little Sand Creek	1. need protection from ATV/4WD use 2. need protection from ATV/4WD use 3. Sand Creek to Little Sand Creek should not be a circle route because of the areas importance for connectivity. Timing controls on	Commercial Hunting & Fishing Focus Group session. March 27, 2002

LU #	Drainage (if applicable)	Topic	Key resource values	Management direction (existing or recommended)	Reference (Source) *(Document, date, section and/or pages)*
			4. Mineral claim creates unwanted access.	ATV use suggested.	
C25	Sand Creek, McDermid Creek	Recreation	Huckleberry patches at Sand Creek, McDermid Creek	should not be commercialized because of the resulting conflicts with wildlife	Commercial Hunting & Fishing Focus Group session. March 27, 2002.
C25	RMZ C-I01	Recreation	Maintain recreation opportunities from roaded to semi-primitive non-motorized.		KBLUP IS: Appendix 3, Page 16
C25	RMZ C-I01	Recreation-Commercial Tourism	Maintain and enhance opportunities for resorts and commercial backcountry recreation	As necessary provide for the expansion of Fernie and Sparwood ski areas, and for expansion of CBR activities at Island Lake Lodge. These actions will be subject to consideration of conservation values, municipal and regional planning, and the provincial land use charter and goals through a referral process.	KBLUP IS: Appendix 3, Page 16
C25	CORE polygon 19-1	Recreation-Commercial Tourism	Snow Much Fun Cat Skiing operation uses Little Sand Creek area	T1 Guideline: -maintain traditional use access; -consultation and consensus on access issues (mining referrals would not normally be routed through tourism unless there was a substantial wilderness impact); -consultation on potential alternatives through resource extraction	CORE 1994 East Kootenay Land Use Plan, Polygon 19-1 Record of Information + T1 Guideline.
C25		Recreation	Backcountry Recreation Management as per ROS.		KBLUP IS: Ch. 3.9, Page 54-57
C25	Various	Recreation-Visuals	Class 1 Scenic Corridor		KBLUP IS: Ch. 3.8, Page 52-54
C25	CORE polygon 19-1	Recreation-Visuals	Tourism Visuals – Viewscapes from highway	T1 Guideline: General Visuals-smoke management guidelines / Visual Quality Objectives guidelines apply (implying restrictions on timber volume) Tourism Visuals-management of high tourism value viewscapes for some enhanced analysis and landscape design (implying no change in timber volume)	CORE 1994 East Kootenay Land Use Plan, Polygon 19-1 Record of Information + T1 Guideline.
C25	CORE polygon 19-1	Recreation – Sense of Solitude		T1 Guideline: -Local agreement preferred -Full range of mechanized and non-mechanized access/activities can be allowed	CORE 1994 East Kootenay Land Use Plan, Polygon 19-1 Record of Information + T1 Guideline.
C25	Iron/Lizard PAS Unit 48	Cultural Heritage	Represents a significant diversity of themes: oil and gas exploration, pre-contact native economic activities, native trail systems, rural development		Best P.A.S. Report: Identification, Evaluation and Ranking of Areas within the Kootenay Region that

LU #	Drainage (if applicable)	Topic	Key resource values	Management direction (existing or recommended)	Reference (Source) *(Document, date, section and/or pages)*
			patterns and forestry. No recorded sites except for a regionally significant lithic scatter on northern boundary		meet the Protected Areas Strategy Goals and Criteria. Prepared by Conservation, Recreation and Cultural Heritage Subgroups of the Kootenay Regional Protected Areas Team (RPAT). November, 1993. Unit 48.
C25	CORE polygon 19-1	Cultural Heritage		T1 Guideline **Planning:** ID cultural heritage resource (see FPC). Development without preparation of cultural heritage impact assessment. **Access:** restrictions unlikely. Directional signage to cultural/heritage sites permitted. Signage re: visitor behaviour and to ID site as significiant cultural/heritage feature desired. Land trades possible to create access across private lands. **Facilities:** Major construction permitted at cultural heritage resource sites. Buffering not required. Adaptive reuse of appropriate heritage structures without restriction. **Activities:** restrictions unlikely. Resource extraction or harvesting unlikely to be restricted for cultural heritage values. Environmental protection opportunities for special exemption from mining reclamation.	CORE 1994 East Kootenay Land Use Plan, Polygon 19-1 Record of Information + T1 Guideline.
C25	T505, [illegible]	Watershed	Class 2 Domestic Watershed		KBLUP IS: Ch. 3.7, Page 30-52
C25	T505, [illegible]5	Watershed	Class 3 Domestic Watershed		KBLUP IS: Ch. 3.7, Page 30-52
C25	McDermid Gulch	Biodiversity	McDermid Gulch may be the "best" wildlife habitat in the plan area		Commercial Hunting & Fishing Focus Group session. March 27, 2002.
C25		Biodiversity Emphasis	Medium Biodiversity Emphasis		KBLUP IS: Ch. 3.2, Page 3-6 Appendix 3 - Appendix C
C25		Biodiversity – Connectivity	All or portion of unit is important for regional connectivity		KBLUP IS: Ch. 3.3, Page 6-8
C25	CORE polygon 19-1	Biodiversity – General	The face of the Rocky Mountains from the Bull to Elk River. Steep, rocky west facing slopes primarily	T1 Guideline: Interior Fish-Forestry Guidelines / Riparian and Streamside	CORE 1994 East Kootenay Land Use Plan, Polygon 19-1 Record of

LU #	Drainage (if applicable)	Topic	Key resource values	Management direction (existing or recommended)	Reference (Source) *(Document, date, section and/or pages)*
				Management Guidelines / Wildlife Tree Guidelines / Specific plans for red/blue listed species management	Information + T1 Guideline
C25	RMZ C-I01	Biodiversity – General	1. Maintain regional connectivity between the Wigwam and Top of the World Provincial Park and the Elk and Bull river watersheds (linking SRMZ units C-S01, CS02 and C-S06); to contribute to ecosystem representation (ICHmk1, ICHmw2); and serve as habitat linkage for the seasonal migration of ungulates. 2. Maintain integrity of alpine environments	1.1 Apply connectivity guidelines within the regional connectivity corridor as per Chapter 3.3 2.1 through access management as per guidelines, Chapter 3.12	KBLUP IS: Appendix 3, Page 17
C25	RMZ C-I01	Biodiversity – Old Growth	Burton Creek south-west OGMA	**Burton Creek south-west OGMA to remain intact until OGMA's for the unit are established. These stands should be a part of the OGMA for the LU.**	MOU between MOF+MOE re: instructions for Preparation of 1998 FDP's, Page 2
C25	CORE polygon 19-1	Biodiversity – Old Growth		T1 Guideline: Old growth dependent species FENs / Interior Fish-Forestry-Wildlife Guidelines / Regional Wildlife Habitat Guidelines	CORE 1994 East Kootenay Land Use Plan, Polygon 19-1 Record of Information + T1 Guideline.
C25	RMZ C-I01: T400, T425, T430, T530, T525, T505	Biodiversity – Natural Grasslands		Fire Maintained Ecosystem Guidelines apply	KBLUP IS: Chapter 3.10, Pages 58-65
C25	CORE polygon 19-1	Biodiversity – Natural Grasslands	Areas of NDT5-Alpine tundra and sub alpine parkland.	T1 Guideline: Weed control / Maintenance of riparian habitats / Grazing management guidelines/ Off-road vehicle control / Monitoring of range condition and trend in terms of domestic and wildlife grazers	CORE 1994 East Kootenay Land Use Plan, Polygon 19-1Record of Information, T1 Guideline + Natural Disturbance Type mapping.
C25	RMZ C-I01	Ungulates	Ungulate Winter Range (SEM, EMW)		KBLUP IS: Ch. 3.5, Page 17-24
C25	RMZ C-I01	Ungulates	1. Maintain abundance of mule deer, white-tailed deer, elk, moose, Rocky Mountain Bighorn Sheep and Rocky Mountain Goats within the sustainable carrying capacity of their habitat.	1.1 Maintain suitable summer and winter habitats and minimize wildlife displacement by developing an access management plan to ensure compatible industrial and recreational activities as per Access Management Guidelines, Chapter 3.12 1.2 Sustain early seral ungulate habitat by initiating controlled fires.	KBLUP IS: Appendix 3, Page 17
C25	CORE polygon 19-1	Ungulates	Ungulate Winter Range	T1 Guideline: -Wildlife harvesting guidelines / TSA harvesting guidelines / specific referrals on the ground	CORE 1994 East Kootenay Land Use Plan, Polygon 19-1 Record of Information, T1 Guideline.
C25		Wide ranging	Priority 1 and Priority 2 Grizzly Bear Habitat		KBLUP IS: Ch 3.4, Pages 8-17

LU #	**Drainage** (if applicable)	**Topic**	**Key resource values**	**Management direction** (existing or recommended)	**Reference (Source)** *(Document, date, section and/or pages)*
		carnivores			
C25	RMZ C-I01	Wide ranging carnivores	1. Maintain sufficient seasonal habitat to retain the existing Grizzly Bear population. 2. Ensure the existing wolf populations utilizing the Bull river drainage are maintained or enhanced.	1.1 Sustain high productivity berry patches by – initiating controlled fires; and - using no herbicides in high productivity berry patches. 2.1 Maintain sufficient prey habitat and prey populations	KBLUP IS: Appendix 3, Page 17
C25	CORE polygon 19-1	Wide ranging carnivores		T1 Guideline: Interior fish-forestry guidelines / FENs / Access control / Landfill regulations / Management of prey species / Maintenance of seasonal feeding and breeding areas / Harvesting regulations	CORE 1994 East Kootenay Land Use Plan, Polygon 19-1 Record of Information, T1 Guideline.
C25	RMZ C-I01	Fisheries	Riparian zone attributes	Maintain riparian zone attributes associated with the Bull River and Sand Creek. High priority for appropriate management regimes for livestock and wildlife.	KBLUP IS: Appendix 3, Page 17
C25	CORE polygon 19-1	Fisheries		T1 Guideline: Interior Fish-Forestry Guidelines / Riparian and Streamside Management Guidelines / Maintenance of spawning and rearing habitat	CORE 1994 East Kootenay Land Use Plan, Polygon 19-1 Record of Information, T1 Guideline.
C25	CORE polygon 19-1	Mining		T1 Guideline: Mines Act / Health, Safety and Reclamation Code / Mineral Tenure Act / Mine Development Assessment Act / Water Act / Fisheries Act / Forest Act / Guidelines for Mineral Exploration / Guidelines for Coal Exploration / Petroleum and Natural Gas Act / Geothermal Resources Act / other related regulations and guidelines	CORE 1994 East Kootenay Land Use Plan, Polygon 19-1 Record of Information + T1 Guideline.
C25	CORE polygon 19-1	Unacceptable Uses	None		CORE 1994 East Kootenay Land Use Plan, Polygon 19-1 Record of Information.
C26	Iron/Lizard PAS Unit 48	1993 Best PAS Areas	Area extends from valley floor to the alpine and includes all of the Lizard Range and the drainage of Iron Creek. PAS Value: Iron Creek and the Lizard Range is a strategically located core area that connects to the Bull River, the Elk River and Coyote Creek (via North Galbraith Creek and Top of the World Provincial Park). Further connections link to the Wigwam and Flathead Rivers.	1993 recommended Priority Two area for protection.	Best P.A.S. Report. Identification, Evaluation and Ranking of Areas within the Kootenay Region that meet the Protected Areas Strategy Goals and Criteria. Prepared by Conservation, Recreation and Cultural Heritage Subgroups of the Kootenay Regional Protected Areas Team (RPAT). November, 1993. Unit 48.

LU #	Drainage (if applicable)	Topic	Key resource values	Management direction (existing or recommended)	Reference (Source) *(Document, date, section and/or pages)*
			Diversity: Supports moose, elk, mule deer, white tailed deer, mountain goat (including wintering populations), and black and grizzly bears. Connects to Bull River and Elk River, and to Coyote Creek via North Galbraith Creek and TOW Prov. Pk.. Contributes to Bull River cutthroat trout fishery. Covered under a Wildlife Act Vehicular Access Hunting Closure. Viability: This unit is large enough (37,545 ha), and has a sufficiently complete watershed to be viable, particularly in conjunction with PAS Unit 17, North Galbraith Creek. Naturalness in 1993: Less than 25% disturbed by roads, a powerline and ski hill development.		
C26	CORE polygon 4-2	Agriculture	Agriculture sector notes relating to Unit 4-2: 1. All existing range units have extremely high value to the cattle industry. Investments since 1975 include fencing, water developments, corrals, clearing, seeding. 2. Grazing systems to maintain/enhance plant community values and wildllife habitat in place 3. CRMP in place on most range units 4. EK Trench Agriculture/Wildlife Committee vegetation monitoring project began in 1992 to determine forage use and diet overlap of cattle and wildlife. (Refer to CORE tab in black binder for Agriculture Sector notes relating to Units 4-2, 4-6b, 4-7).	Maintain current level of agricultural activity (CORE Management Guidelines -Agriculture Notes-AG1). Outdoor Recreation non-motorized sector expresses concern with regard to expansion of cattle grazing in this unit, however whole heartedly supports CRMP's and the work of the EK Trench Agriculture/Wildlife Committee. T1 Guideline-Grazing tenures	CORE 1994 East Kootenay Land Use Plan. Polygon 4-1 Record of Information + T1 Guideline.
C26		Agriculture	Moderate range values. Range agreements: One cattle grazing license overlaps with LU C28 & C34; Total 360 AUMs attributable to LU C26		Cranbrook Forest District Recreation Access Plan. March, 2000. LU C26.
C26	Bull River	Agriculture	Bull River Range Agreement Holders:	If marked with GT, the Range Agreement Area matches the Guide	Cranbrook Forest District Range

LU #	**Drainage** (if applicable)	**Topic**	**Key resource values**	**Management direction** (existing or recommended)	**Reference (Source)** *(Document, date, section and/or pages)*
	Range Unit		GT: Grizzly Basin Outfitters Ltd -63 AUMs CD Reay and Sons Ltd – marginal use along Bull R GT: Vince Cocciolo - 69 AUMs GT: Bull River Outfitters Ltd - 88 AUMs	Outfitting Territory Bull River Range Unit includes LU C25 (part), C26, C27, C28	Unit Map and Range Agreement Holder information (refer to Range tab in black binder)
C26	Various	Access Management	1. Sand Creek to Iron Creek connective corridor, critical for ungulates 2. Mineral lick at Sulphur Springs – Hartley pass 3. Dooley Creek 4. Huckleberry patches at Iron Creek	1. Needs protection from existing high levels of ATV/4WD use 2. Needs protection from ATV/4WD use. 3. New road should be deactivated. 4. Should not be commercialized to avoid bear-human conflicts as well as access issues.	Commercial Hunting & Fishing Focus Group session. March 27, 2002
C26	RMZ C-I01	Recreation	1. Maintain recreation opportunities from roaded to semi-primitive non-motorized.	1.1 Maintain existing road accessible campsites along the Bull River. 1.2 Manage the Bull River as a Backcountry River Corridor consistent with the Backcountry Recreation Guidelines (Chapter 3.9). Apply for non-motorized use restriction, upstream of the Aberfeldie Reservoir through Transport Canada 1.3 No permanent road access within 500m of the river unless it is less environmentally damaging to construct the road within this 500m zone. 1.4 New roads constructed for resource development and not needed for ongoing resource management are to be deactivated upon conclusion of resource development.	KBLUP IS: Appendix 3, Page 16
C26	CORE polygon 4-2	Recreation	Important unroaded wilderness area for local recreationalist. Used for hunting and back country skiing. High value river paddling on Bull River. High value karst and caving exploration in the high elevations of the Lizard Range.		CORE 1994 East Kootenay Land Use Plan, Polygon 4-2 Record of Information
C26	RMZ C-I01	Recreation-Commercial Tourism	Maintain and enhance opportunities for resorts and commercial backcountry recreation	As necessary provide for the expansion of Fernie and Sparwood ski areas, and for expansion of CBR activities at Island Lake Lodge. These actions will be subject to consideration of conservation values, municipal and regional planning, and the provincial land use charter and goals through a referral process.	KBLUP IS: Appendix 3, Page 16
C26	CORE polygon 4-2	Recreation-Commercial Tourism	Important guide outfitting area. Snow Much Fun Cat Skiing operation uses Little Sand Creek area. Island Lake Lodge.	T1 Guideline: -maintain traditional use access. -consultation and consensus on access issues (mining referrals would not normally be routed through tourism unless there was a	CORE 1994 East Kootenay Land Use Plan, Polygon 4-2 Record of Information + T1 Guideline.

LU #	Drainage (if applicable)	Topic	Key resource values	Management direction (existing or recommended)	Reference (Source) *(Document, date, section and/or pages)*
				substantial wilderness impact); -consultation on potential alternatives through resource extraction.	
C26		Recreation	Backcountry Recreation Management as per ROS.		KBLUP IS: Ch. 3.9, Page 54-57
C26	B290, B300, B340, B345, B350, B355	Recreation-Visuals	Class 1 Scenic Corridor		KBLUP IS: Ch. 3.8, Page 52-54
C26	CORE polygon 4-2	Recreation-Visuals	Recreation sites	T1 Guidelines: 1. General Visuals-smoke management guidelines / Visual Quality Objectives guidelines apply (implying restrictions on timber volume). 2. Tourism Visuals-management of high tourism value viewscapes for some enhanced analysis and landscape design (implying no change in timber volume).	CORE 1994 East Kootenay Land Use Plan. Polygon 4-2 Record of Information + T1 Guidelines.
C26	CORE polygon 4-2	Recreation – Sense of Solitude	Recreation sites	T1 Guideline: -Local agreement preferred -Full range of mechanized and non-mechanized access/activities can be allowed.	CORE 1994 East Kootenay Land Use Plan. Polygon 4-2 Record of Information + T1 Guideline.
C26	Iron/Lizard PAS Unit 48	Cultural Heritage	Represents a significant diversity of themes oil and gas exploration, pre-contact native economic activities, native trail systems, rural development patterns and forestry. No recorded sites except for a regionally significant lithic scatter on northern boundary.		Best P.A.S. Report. Identification, Evaluation and Ranking of Areas within the Kootenay Region that meet the Protected Areas Strategy Goals and Criteria. Prepared by Conservation, Recreation and Cultural Heritage Subgroups of the Kootenay Regional Protected Areas Team (RPAT). November, 1993. Unit 48.
C26	CORE polygon 4-2	Cultural Heritage		T2 Guideline: **Planning:** Public notification and/or review required within development planning process. In the case of highly sensitive or valued sites, extensive public review likely. Mitigation of impacts, protection of resources, and/or recovery of cultural heritage resource before development, may be required. **Access:**	CORE 1994 East Kootenay Land Use Plan. Polygon 4-2 Record of Information + T2 Guideline.

LU #	Drainage (if applicable)	Topic	Key resource values	Management direction (existing or recommended)	Reference (Source) *(Document, date, section and/or pages)*
				Based on local agreements. Guidelines regarding modes/routes of access and levels of use may be required in case of highly sensitive or valued sites. Fencing may be required. Directional signage may be restricted or not allowed. Some buffering from access routes to minimize vandalism. Sensitive sites to be well buffered. Roads to avoid contextual areas. **Facilities:** Restrictions on construction of facilities within contextual areas. In sensitive areas, no development permitted. Temporary site protection may be required. Preservation and reuse of related heritage sites may be permitted under controlled conditions. **Activities** High control level on use of fire and chemicals to protect cultural heritage sites. Activities and party size may be restricted. Establishment of a cultural heritage impact assessment process, including recognized cultural heritage advisors. Development plans to be referred to Community Heritage Commission (or equivalent).	
C26		Biodiversity – Rare and Endangered Species	Suskdorf's Broomrape- Red listed (threatened or endangered) Habitat: Parasite of Aster spp.. Grows in grass, shrubs of steppe and montane. Distribution: Rare in S.E. B.C.. Known only from Bull River		Listed Vertebrate and Vascular Plant Species Occurring in the Cranbrook Forest District and in the Southern Rocky Mountain Management Plan Area. March, 2002. Page 18
C26		Biodiversity Emphasis	Medium Biodiversity Emphasis		KBLUP IS: Ch. 3.2, Page 3-6 Appendix 3 - Appendix C
C26		Biodiversity – Connectivity	All or portion of unit is important for regional connectivity		KBLUP IS: Ch. 3.3, Page 6-8
C26	CORE polygon 4-2	Biodiversity – General	-Drainages of the Bull River. -High mountain terrain, partly in the Border Ranges Ecosection and the Southern Continental Ranges Ecosection. -Important biodiversity corridor north to south, connecting Flathead drainage via Elko area and Mt. Broadwood and Lodgepole/Wigwam drainage	T1 Guideline: Interior Fish-Forestry Guidelines / Riparian and Streamside Management Guidelines / Wildlife Tree Guidelines / Specific plans for red/blue listed species management	CORE 1994 East Kootenay Land Use Plan, Polygon 4-2 Record of Information + T1 Guideline

LU #	Drainage (if applicable)	Topic	Key resource values	Management direction (existing or recommended)	Reference (Source) *(Document, date, section and/or pages)*
C26	RMZ C-I01	Biodiversity – General	1. Maintain regional connectivity between the Wigwam and Top of the World Provincial Park to the Elk and Bull river watersheds (linking SRMZ units C-S01, CS02 and C-S06); to contribute to ecosystem representation (ICHmk1, ICHmw2); and serve as habitat linkage for the seasonal migration of ungulates. 2. Maintain integrity of alpine environments	1.1 Apply connectivity guidelines within the regional connectivity corridor as per Chapter 3.3 2.1 through access management as per guidelines, Chapter 3.12	KBLUP IS: Appendix 3, Page 17
C26	RMZ C-I01	Biodiversity – Old Growth	Retain attributes for old growth dependent species and fur bearers.	The Bull River watershed is a priority for OGMA establishment	KBLUP IS: Appendix 3, Page 17
C26	CORE polygon 4-2	Biodiversity – Old Growth	Remnant old growth throughout unit with special attention to Oliver Creek	T1 Guideline: Old growth dependent species FENs / Interior Fish-Forestry-Wildlife Guidelines / Regional Wildlife Habitat Guidelines	CORE 1994 East Kootenay Land Use Plan, Polygon 4-2 Record of Information + T1 Guideline
C26	B355	Biodiversity – Natural Grasslands		Fire Maintained Ecosystem Guidelines apply	KBLUP IS: Chapter 3.10, Pages 58-65
C26	CORE polygon 4-2	Biodiversity – Natural Grasslands	Areas of NDT5-Alpine tundra and sub alpine parkland	T1 Guideline: Weed control / Maintenance of riparian habitats / Grazing management guidelines/ Off-road vehicle control / Monitoring of range condition and trend in terms of domestic and wildlife grazers	CORE 1994 East Kootenay Land Use Plan, Polygon 19-1Record of Information, T1 Guideline + Natural Disturbance Type mapping
C26	RMZ C-I01	Ungulates	Ungulate Winter Range (SEMW, XEM, XE)		KBLUP IS: Ch. 3.5, Page 17-24
C26	RMZ C-I01	Ungulates	1. Maintain abundance of mule deer, white-tailed deer, elk, moose, Rocky Mountain Bighorn Sheep and Rocky Mountain Goats within the sustainable carrying capacity of their habitat	1.1 Maintain suitable summer and winter habitats and minimize wildlife displacement by developing an access management plan to ensure compatible industrial and recreational activities as per Access Management Guidelines, Chapter 3.12 1.2 Sustain early seral ungulate habitat by initiating controlled fires **1.3 Establish the mineral lick at Sulpher Creek as a Sensitive Area under the FPC**	KBLUP IS: Appendix 3, Page 17
C26	CORE polygon 4-2	Ungulates	Ungulate Winter Range Sheep at McDermett Creek and lower south west facing slopes of Iron Creek	T1 Guideline: -Wildlife harvesting guidelines / TSA harvesting guidelines / specific referrals on the ground	CORE 1994 East Kootenay Land Use Plan, Polygon 4-2 Record of Information, T1 Guideline
C26		Wide ranging carnivores	Priority 1 and Priority 2 Grizzly Bear Habitat		KBLUP IS: Ch 3.4, Pages 8-17

LU #	Drainage (if applicable)	Topic	Key resource values	Management direction (existing or recommended)	Reference (Source) *(Document, date, section and/or pages)*
C26	RMZ C-I01	Wide ranging carnivores	1. Maintain sufficient seasonal habitat to retain the existing Grizzly Bear population. 2. Ensure the existing wolf populations utilizing the Bull river drainage are maintained or enhanced.	1.1 Sustain high productivity berry patches by – initiating controlled fires; and - using no herbicides in high productivity berry patches. 2.1 Maintain sufficient prey habitat and prey populations.	KBLUP IS: Appendix 3, Page 17
C26	CORE polygon 4-2	Wide ranging carnivores		T1 Guideline: Interior fish-forestry guidelines / FENs / Access control / Landfill regulations / Management of prey species / Maintenance of seasonal feeding and breeding areas / Harvesting regulations	CORE 1994 East Kootenay Land Use Plan, Polygon 4-2 Record of Information, T1 Guideline.
C26		Wide ranging carnivores	Value: security. Watersheds adjacent to the Flathead provide important habitat and security for carnivores that enhance the value of the Flathead (p 39). Carnivore conservation principle (2): provide security from excessive mortality with networks of core reserves and other precautionary measures.	- Provide a network of seasonal or permanent security zones throughout the transboundary Flathead basin and elsewhere in the new 'Southern Rocky Mountain Conservation Area'. Consideration of focal species' key habitats will be used to guide the strategic identification and delineation of security zones.	J Weaver. The Transboundary Flathead, British Columbia and Montana: A Critical Landscape for Carnivores in the Rocky Mountains. 2001. p45.
C26	RMZ C-I01	Fisheries	1. Maintain breeding and nesting opportunities for Harlequin Ducks on the Bull River 2. Bull River and Sand Creek riparian zone attributes 3. Maintain wild fish stocks and habitats for Cutthroat Trout in the Bull River	1.1 Initiate an inventory of breeding and nesting habitat needs. 2.1 Maintain riparian zone attributes associated with the Bull River and Sand Creek. High priority for appropriate management regimes for livestock and wildlife. 3.1 Assess fish populations and habitats and document the fishery 3.2 Review current management strategies 3.3 Though consultations with BC Hydro, ensure habitat impacts are minimized. 3.4 Explore regulation changes which could be used to limit overfishing	KBLUP IS: Appendix 3, Page 17
C26	CORE polygon 4-2	Fisheries		T2 Guideline: Excludes Sand Creek. -Minimal human-caused sedimentation. -Protection of streamside and riparian habitats; no roads in riparian without special permission, however, stream crossing normally acceptable. -Management for large organic debris.	CORE 1994 East Kootenay Land Use Plan, Polygon 4-2 Record of Information, T1 Guideline

LU #	Drainage (if applicable)	Topic	Key resource values	Management direction (existing or recommended)	Reference (Source) *(Document, date, section and/or pages)*
				-Watershed sensitivity and ECA analysis prior to development. -Protection of spawning and rearing habitat -Reclamation and hydrologic stabilization where necessary. -Assume level one guidelines in place where level two's are applied	
C26	CORE polygon 4-2	Mining	Mineral values in several areas	T1 Guideline: Mines Act / Health, Safety and Reclamation Code / Mineral Tenure Act / Mine Development Assessment Act / Water Act / Fisheries Act / Forest Act / Guidelines for Mineral Exploration / Guidelines for Coal Exploration / Petroleum and Natural Gas Act / Geothermal Resources Act / other related regulations and guidelines	CORE 1994 East Kootenay Land Use Plan, Polygon 4-2 Record of Information + T1 Guideline.
C26	CORE polygon 4-2	Unacceptable Uses	Settlement is not an acceptable use		CORE 1994 East Kootenay Land Use Plan, Polygon 4-2 Record of Information.
C27	CORE polygon 4-1	Agriculture		Potential for increased agricultural activity. Intent is to pursue the possibility (CORE, East Kootenay Regional Table, Volume 3, Part B Management Guidelines, Agriculture Notes, AG 2). Outdoor Recreation non-motorized sector expresses concern with regard to expansion of cattle grazing in this unit, however whole heartedly supports CRMP's and the work of the EK Trench Agriculture/Wildlife Committee (CORE, 4-1 Record of Information, Sector Comments). T1 Guideline-Grazing tenures	CORE 1994 East Kootenay Land Use Plan, Polygon 4-1 Record of Information + T1 Guideline.
C27		Agriculture	Low range values. Range agreements: Three grazing permits for guide outfitter horses overlap LU C26 &C28. Total 180 AUMs attributable to LU C27		Cranbrook Forest District Recreation Access Plan. March, 2000. LU C27.
C27	Bull River Range Unit	Agriculture	Bull River Range Agreement Holders: GT: Grizzly Basin Outfitters Ltd -63 AUMs CD Reay and Sons Ltd – marginal use along Bull R. GT: Vince Cocciolo - 69 AUMs GT: Bull River Outfitters Ltd - 88 AUMs	If marked with GT, the Range Agreement Area matches the Guide Outfitting Territory Bull River Range Unit includes LU C25 (part), C26, C27, C28	Cranbrook Forest District Range Unit Map and Range Agreement Holder information (refer black binder, Range tab)
C27	Crossing Creek	Access	Crossing Creek is high elevation Bighorn sheep winter and summer range.	Distinct population needs protection. Existing problem with ATV/snowmobile use. Must be designated an off-limit area and enforced	Commercial Hunting & Fishing Focus Group session, March 27, 2002

LU #	**Drainage** (if applicable)	**Topic**	**Key resource values**	**Management direction** (existing or recommended)	**Reference (Source)** *(Document, date, section and/or pages)*
C27	Various	Access	The following drainages are very important for connectivity: 1. Culver to Brule Creek for sheep; 2. Bull River to White River for elk; 2. Upper Bull River sheep crossing; 3. Martin Creek to the east side of the Rockies; 4. Brule – Boivan – Crossing Creek connectivity.	Access should be restricted accordingly.	Commercial Hunting & Fishing and Recreational Hunting & Fishing Focus Group sessions. March 27, 2002.
C27	CORE polygon 4-1	Proposed Protected Area		Outdoor Recreation Non-Motorized Sector proposes that the area south of Top of the World (Summer Lake and Bear Lake areas) be included in Polygon 4-6, Upper Galbraith and Protected with wheelchair access in mind.	CORE. 4-1 Record of Information Sector Comments
C27	Narboe Creek	Recreation	Narboe Creek MOF Recreation Trail	Should not be upgraded.	Recreational Hunting & Fishing Focus Group session. March 27, 2002.
C27	RMZ C-I01	Recreation	1. Maintain recreation opportunities from roaded to semi-primitive non-motorized.	1.1 Maintain existing road accessible campsites along the Bull River. 1.2 Manage the Bull River as a Backcountry River Corridor consistent with the Backcountry Recreation Guidelines (Chapter 3.9). Apply for non-motorized use restriction, upstream of the Aberfeldie Reservoir through Transport Canada 1.3 No permanent road access within 500m of the river unless it is less environmentally damaging to construct the road within this 500m zone. 1.4 New roads constructed for resource development and not needed for ongoing resource management are to be deactivated upon conclusion of resource development.	KBLUP IS: Appendix 3, Page 16
C27	CORE polygon 4-1	Recreation	High value river paddling on Bull River. Many existing recreation areas and trails. Important road access to accommodate technical climbing on Mt. Harrison.	No guidelines provided	CORE 1994 East Kootenay Land Use Plan, Polygon 4-1 Record of Information
C27	RMZ C-I01	Recreation-Commercial Tourism	Maintain and enhance opportunities for resorts and commercial backcountry recreation.		KBLUP IS: Appendix 3, Page 16
C27	CORE polygon 4-1	Recreation-Commercial Tourism	Several guide outfitting areas and base camps. Important recreation values along Bull River for river paddling.	T1 Guideline: -maintain traditional use access; -consultation and consensus on access issues (mining referrals	CORE 1994 East Kootenay Land Use Plan, Polygon 4-1 Record of Information + T1 Guideline.

LU #	Drainage (if applicable)	Topic	Key resource values	Management direction (existing or recommended)	Reference (Source) *(Document, date, section and/or pages)*
				would not normally be routed through tourism unless there was a substantial wilderness impact); -consultation on potential alternatives through resource extraction	
C27		Recreation	Backcountry Recreation Management as per ROS		KBLUP IS. Ch. 3.9, Page 54-57
C27	CORE polygon 4-1	Recreation-Visuals	1. General Visuals: visual corridors for high value recreation trails and canoe/kayak routes. Special visual concerns for areas associated with recreation trails and rivers to be worked out at the local level of planning; visual corridor for lower Wildhorse river near Fort Steele (heritage values). 2. Tourism Visuals : visual corridor for lower Wildhorse river near Fort Steele and Fisherville site.	T1 Guideline: 1. General Visuals-smoke management guidelines / Visual Quality Objectives guidelines apply (implying restrictions on timber volume) 2. Tourism Visuals-management of high tourism value viewscapes for some enhanced analysis and landscape design (implying no change in timber volume)	CORE 1994 East Kootenay Land Use Plan, Polygon 4-1 Record of Information + T1 Guideline.
C27	CORE polygon 4-1	Recreation – Sense of Solitude	High value kayak/canoeing in major rivers; high recreation values in Summer Lake area with special concern for handicapped access.	T1 Guideline: -Local agreement preferred -Full range of mechanized and non-mechanized access/activities can be allowed.	CORE 1994 East Kootenay Land Use Plan, Polygon 4-1 Record of Information + T1 Guideline.
C27	CORE polygon 4-1	Cultural Heritage		T2 Guideline: **Planning:** Public notification and/or review required within development planning process. In the case of highly sensitive or valued sites, extensive public review likely. Mitigation of impacts, protection of resources, and/or recovery of cultural heritage resource before development, may be required. **Access:** Based on local agreements. Guidelines regarding modes/routes of access and levels of use may be required in case of highly sensitive or valued sites. Fencing may be required. Directional signage may be restricted or not allowed. Some buffering from access routes to minimize vandalism. Sensitive sites to be well buffered. Roads to avoid contextual areas. **Facilities:** Restrictions on construction of facilities within contextual areas. In sensitive areas, no development permitted. Temporary site protection may be required. Preservation and reuse of related	CORE 1994 East Kootenay Land Use Plan, Polygon 4-1 Record of Information + T2 Guideline.

LU #	Drainage (if applicable)	Topic	Key resource values	Management direction (existing or recommended)	Reference (Source) *(Document, date, section and/or pages)*
				heritage sites may be permitted under controlled conditions. **Activities** High control level on use of fire and chemicals to protect cultural heritage sites. Activities and party size may be restricted. Establishment of a cultural heritage impact assessment process, including recognized cultural heritage advisors. Development plans to be referred to Community Heritage Commission (or equivalent).	
C27		Biodiversity – Rare and Endangered Species	Suskdorf's Broomrape- Red listed (threatened or endangered) Habitat: Parasite of Aster spp.. Grows in grass, shrubs of steppe and montane. Distribution: Rare in S.E. B.C.. Known only from Bull River.		Listed Vertebrate and Vascular Plant Species Occurring in the Cranbrook Forest District and in the Southern Rocky Mountain Management Plan Area. March, 2002. Page 18.
C27		Biodiversity Emphasis	Medium Biodiversity Emphasis		KBLUP IS: Ch. 3.2, Page 3-6 Appendix 3 - Appendix C
C27	Various	Biodiversity - Connectivity	The following drainages are very important for connectivity: 1. Culver to Brule Creek for sheep; 2. Bull River to White River for elk; 5. Upper Bull River sheep crossing; 6. Martin Creek to the east side of the Rockies; 7. Brule – Boivan – Crossing Creek connectivity		Commercial Hunting & Fishing and Recreational Hunting and Fishing Focus Group sessions, March 27, 2002.
C27		Biodiversity – Connectivity	All or portion of unit is important for regional connectivity		KBLUP IS: Ch. 3.3, Page 6-8
C27	CORE polygon 4-1	Biodiversity – General	Wildlife corridor should be maintained through Quinn Creek and Blackfoot Creek, down the White River and continuing north to the Height of the Rockies Wilderness Area. No settlement and very little private land in the unit. Global Ecosystems Sector notes importance of unit for connectivity and migration. Suggest access management and retention of cover to be achieved through T2 Guideline for Biodiversity (Refer to black binder, CORE tab, Sector Comments for Polygon 4-1).	T1 Guideline: Interior Fish-Forestry Guidelines / Riparian and Streamside Management Guidelines / Wildlife Tree Guidelines / Specific plans for red/blue listed species management	CORE 1994 East Kootenay Land Use Plan, Polygon 4-1 Record of Information + T1 Guideline.

LU #	Drainage (if applicable)	Topic	Key resource values	Management direction (existing or recommended)	Reference (Source) *(Document, date, section and/or pages)*
C27	RMZ C-I01	Biodiversity – General	1. Retain forest and grassland ecological elements and processes, including species richness, distribution, and diversity at a low risk. 2. Maintain regional connectivity between the Wigwam and Top of the World Provincial Park to the Elk and Bull river watersheds (linking SRMZ units C-S01, CS02 and C-S06); to contribute to ecosystem representation (ICHmk1, ICHmw2); and serve as habitat linkage for the seasonal migration of ungulates. 3. Maintain integrity of alpine environments	**1.1 Quinn Creek should be designated as a Sensitive Area under the FPC.** 2.1 Apply connectivity guidelines within the regional connectivity corridor as per Chapter 3.3 3.1 through access management as per guidelines, Chapter 3.12	KBLUP IS: Appendix 3, Page 17
C27	RMZ C-I01	Biodiversity – Old Growth	Retain attributes for old growth dependent species and fur bearers.	The Bull River watershed is a priority for OGMA establishment.	KBLUP IS: Appendix 3, Page 17
C27	RMZ C-I01	Biodiversity – Old Growth	Quinn Creek North, Quinn Creek South Old Growth Management Areas	Quinn Creek North & Quinn Creek South Old Growth Management Areas are to remain intact until OGMA's for the LU are established. These stands should be a part of the OGMA for the LU.	MOU between MOF and MOE re: Instructions for Preparation of 1998 FDP's, Page 2
C27	CORE polygon 4-1	Biodiversity – Old Growth	Remnant old growth	T1 Guideline: Old growth dependent species FENs / Interior Fish-Forestry-Wildlife Guidelines / Regional Wildlife Habitat Guidelines.	CORE 1994 East Kootenay Land Use Plan, Polygon 4-1 Record of Information + T1 Guideline.
C27	CORE polygon 4-2	Biodiversity – Natural Grasslands	Areas of NDT5-Alpine tundra and sub alpine parkland.	T1 Guideline: Weed control / Maintenance of riparian habitats / Grazing management guidelines/ Off-road vehicle control / Monitoring of range condition and trend in terms of domestic and wildlife grazers	CORE 1994 East Kootenay Land Use Plan, Polygon 4-1Record of Information, T1 Guideline + Natural Disturbance Type mapping.
C27	Crossing Creek	Ungulates	Crossing Creek is high elevation Bighorn sheep winter and summer range.	Distinct population needs protection. Existing problem with ATV/snowmobile use. Must be designated an off-limit area and enforced.	Commercial Hunting & Fishing Focus Group session, March 27, 2002.
C27	RMZ C-I01	Ungulates	Ungulate Winter Range (X)		KBLUP IS: Ch. 3.5, Page 17-24
C27	RMZ C-I01	Ungulates	1. Maintain abundance of mule deer, white-tailed deer, elk, moose, Rocky Mountain Bighorn Sheep and Rocky Mountain Goats within the sustainable carrying capacity of their habitat.	1.1 Maintain suitable summer and winter habitats and minimize wildlife displacement by developing an access management plan to ensure compatible industrial and recreational activities as per Access Management Guidelines, Chapter 3.12. 7.1 Sustain early seral ungulate habitat by initiating controlled fires.	KBLUP IS: Appendix 3, Page 17
C27	CORE	Ungulates	Ungulate Winter Range	T1 Guideline:	CORE 1994 East Kootenay Land

LU #	**Drainage** (if applicable)	**Topic**	**Key resource values**	**Management direction** (existing or recommended)	**Reference (Source)** *(Document, date, section and/or pages)*
	polygon 4-1			-Wildlife harvesting guidelines / TSA harvesting guidelines / specific referrals on the ground.	Use Plan, Polygon 4-1 Record of Information, T1 Guideline.
C27	Quinn Creek	Wide ranging carnivores	Quinn Creek is regionally significant, high quality Lynx habitat.		Commercial Hunting & Fishing Focus Group session, March 27, 2002.
C27		Wide ranging carnivores	Priority 2 (and minor amounts of Priority 1) Grizzly Bear Habitat		KBLUP IS: Ch 3.4, Pages 8-17
C27	RMZ C-I01	Wide ranging carnivores	1. Maintain sufficient seasonal habitat to retain the existing Grizzly Bear population. 2. Ensure the existing wolf populations utilizing the Bull river drainage, and the existing Lynx populations within draft LU 27 are maintained or enhanced.	1.1 Sustain high productivity berry patches by – initiating controlled fires; and - using no herbicides in high productivity berry patches. 2.1 Maintain sufficient prey habitat and therefore prey populations.	KBLUP IS: Appendix 3, Page 17
C27	CORE polygon 4-1	Wide ranging carnivores		T1 Guideline: Interior fish-forestry guidelines / FENs / Access control / Landfill regulations / Management of prey species / Maintenance of seasonal feeding and breeding areas / Harvesting regulations	CORE 1994 East Kootenay Land Use Plan, Polygon 4-1 Record of Information, T1 Guideline.
C27	All (Bull)	Wide ranging carnivores	Value: security Watersheds adjacent to the Flathead provide important habitat and security for carnivores that enhance the value of the Flathead (p 39). Carnivore conservation principle (2): provide security from excessive mortality with networks of core reserves and other precautionary measures.	• Provide a network of seasonal or permanent security zones throughout the transboundary Flathead basin and elsewhere in the new 'Southern Rocky Mountain Conservation Area'. Consideration of focal species' key habitats will be used to guide the strategic identification and delineation of security zones.	J.Weaver, The Transboundary Flathead, British Columbia and Montana: A Critical Landscape for Carnivores in the Rocky Mountains. 2001, p45.
C27	RMZ C-I01	Fisheries	1. Maintain breeding and nesting opportunities for Harlequin Ducks on the Bull River 2. Bull River and Sand Creek riparian zone attributes 3. Maintain wild fish stocks and habitats for Cutthroat Trout in the Bull River	1.1 Initiate an inventory of breeding and nesting habitat needs. 2.1 Maintain riparian zone attributes associated with the Bull River and Sand Creek. High priority for appropriate management regimes for livestock and wildlife. 3.1 Assess fish populations and habitats and document the fishery 3.2 Review current management strategies 3.3 Though consultations with BC Hydro, ensure habitat impacts are minimized. 3.4 Explore regulation changes which could be used to limit	KBLUP IS: Appendix 3, Page 17

LU #	Drainage (if applicable)	Topic	Key resource values	Management direction (existing or recommended)	Reference (Source) *(Document, date, section and/or pages)*
				overfishing.	
C27	CORE polygon 4-1	Fisheries		T2 Guideline applies except to the Wildhorse River. Wildhorse has high placer mining values – recommend streamside rehabilitation within this unit. T2 Guideline: -Minimal human-caused sedimentation. -Protection of streamside and riparian habitats; no roads in riparian without special permission, however, stream crossing normally acceptable. -Management for large organic debris. -Watershed sensitivity and ECA analysis prior to development. -Protection of spawning and rearing habitat. -Reclamation and hydrologic stabilization where necessary. -Assume level one guidelines in place where level two's are applied.	CORE 1994 East Kootenay Land Use Plan, Polygon 4-1 Record of Information, T1 Guideline.
C27	CORE polygon 4-1	Mining	Mineral values in several areas	T1 Guideline: Mines Act / Health, Safety and Reclamation Code / Mineral Tenure Act / Mine Development Assessment Act / Water Act / Fisheries Act / Forest Act / Guidelines for Mineral Exploration / Guidelines for Coal Exploration / Petroleum and Natural Gas Act / Geothermal Resources Act / other related regulations and guidelines	CORE 1994 East Kootenay Land Use Plan, Polygon 4-1 Record of Information + T1 Guideline.
C27	CORE polygon 4-1	Unacceptable Uses	Settlement and General Industrial/Commercial are not acceptable uses		CORE 1994 East Kootenay Land Use Plan, Polygon 4-2 Record of Information.
C28	North Galbraith PAS Unit 17	1993 Best PAS Areas	Drainage originating at the southeast corner of Top of the World Park and flowing south into the Bull River. PAS Value: North Galbraith Creek is a core area which connects to Top of the World Provincial Park and increases its viability. This unit possesses some of the highest cultural values in the region. Diversity: Connects via an existing protected area (TOW park) to Coyote Creek (Lussier River) drainage, to Iron Creek and to Elk River. Provides	1993 recommended Priority One area for protection	Best P.A.S. Report. Identification, Evaluation and Ranking of Areas within the Kootenay Region that meet the Protected Areas Strategy Goals and Criteria. Prepared by Conservation, Recreation and Cultural Heritage Subgroups of the Kootenay Regional Protected Areas Team (RPAT). November, 1993. Unit 17.

LU #	Drainage (if applicable)	Topic	Key resource values	Management direction (existing or recommended)	Reference (Source) *(Document, date, section and/or pages)*
			riparian habitat and important elk migration route along North Galbraith Creek. Contributes to the Bull River cutthroat trout fishery. Possesses extremely high cultural values. Viability: Although this is a relatively small area (10,824 ha), it has a complete watershed and is therefore viable. Naturalness in 1993: Less than 25% disturbed.		
C28	Bull River Range Unit	Agriculture	Bull River Range Agreement Holders: GT: Grizzly Basin Outfitters Ltd -63 AUMs CD Reay and Sons Ltd – marginal use along Bull R. GT: Vince Cocciolo - 69 AUMs GT: Bull River Outfitters Ltd - 88 AUMs	If marked with GT, the Range Agreement Area matches the Guide Outfitting Territory Bull River Range Unit includes LU C25 (part), C26, C27, C28	Cranbrook Forest District Range Unit Map and Range Agreement Holder information (refer to Range tab in black binder)
C28	North Galbraith PAS Unit 17	Cultural Heritage	Major pro-contact communication corridor to Top of the World Park, one of the most important cultural foci of the Ktunaxa for at least 8500 years. Nationally significant cultural landscape, maintaining natural integrity of vista from nationally significant cultural features in Top of the World Park. High probability of containing significant archaeological resources.		Best P.A.S. Report. Identification, Evaluation and Ranking of Areas within the Kootenay Region that meet the Protected Areas Strategy Goals and Criteria. Prepared by Conservation, Recreation and Cultural Heritage Subgroups of the Kootenay Regional Protected Areas Team (RPAT). November, 1993. Unit 17.
C27		Biodiversity – Rare and Endangered Species	Suskdorf's Broomrape- Red listed (threatened or endangered) Habitat: Parasite of Aster spp.. Grows in grass, shrubs of steppe and montane. Distribution: Rare in S.E. B.C.. Known only from Bull River.		Listed Vertebrate and Vascular Plant Species Occurring in the Cranbrook Forest District and in the Southern Rocky Mountain Management Plan Area. March, 2002. Page 18.
C28	All (Bull)	Wide ranging carnivores	Value: security. Watersheds adjacent to the Flathead provide important habitat and security for carnivores that enhance the value of the Flathead (p 39).	• Provide a network of seasonal or permanent security zones throughout the transboundary Flathead basin and elsewhere in the new 'Southern Rocky Mountain Conservation Area'. Consideration of focal species' key habitats will be used to guide the	J.Weaver. The Transboundary Flathead, British Columbia and Montana: A Critical Landscape for Carnivores in the Rocky Mountains. 2001, p45.

LU #	**Drainage** (if applicable)	**Topic**	**Key resource values**	**Management direction** (existing or recommended)	**Reference (Source)** *(Document, date, section and/or pages)*
			Carnivore conservation principle (2): provide security from excessive mortality with networks of core reserves and other precautionary measures.	strategic identification and delineation of security zones.	
C38	Natal/Michel/ Leach Wildlife Range Complex	Ungulates – Elk	Natal/Michel/Leach Wildlife Range Complex is critical elk winter and spring habitat, designated for Intensive Wildlife Management (Category 1). Biophysical Units: • Class 1 - wildlife winter habitat (elk, sheep, moose, goat, mule deer). • Class 2 – mule deer and sheep winter habitat known / suspected mineral licks. This Range Complex is located in LU: C19, C20, C38; C19 contains 3 known mineral licks (refer to Elk-Flathead Operational Wildlife Plan Map and Cross Reference in the LU Summary background information binder).	Wildlife management is recommended as the dominant use. A combination of the following general habitat enhancement activities would be intensively applied to these areas: -Integrated local resource use planning; -Critical habitat identification and protection; -Exploration/mining reclamation; -Impact management activities negotiated under the Mine Development Review Process; -Logging, burning, grazing; -Herbicide, fertilizer treatment; -Slash/brush control, cultivation; -Access planning and management; -Collision mortality management (fencing, underpass, snow clearing); -Winter feeding (restricted).	Elk-Flathead Operational Wildlife Plan. Prepared Jointly by the Planning and Assessment Branch and Cranbrook Wildlife Branch, MOE. December, 1987. Page 13, and Appendix 1, Page 1-2.
C38	Grave Prairie Wildlife Range Complex	Ungulates – Elk	Grave Prairie Wildlife Range Complex is critical elk winter and spring habitat, designated for Intensive Wildlife Management (Category 1). Biophysical Units: • Class 1 - wildlife winter habitat (elk, sheep, moose, goat, mule deer). • Class 2 – mule deer and sheep winter habitat known / suspected mineral licks This Range Complex is located in LU C38 and C23; C38 contains 2 known mineral licks (refer to Elk-Flathead Operational Wildlife Plan Map and Cross Reference in the LU Summary background information binder).	Wildlife management is recommended as the dominant use. A combination of the following general habitat enhancement activities would be intensively applied to these areas: -Integrated local resource use planning; -Critical habitat identification and protection; -Exploration/mining reclamation; -Impact management activities negotiated under the Mine Development Review Process; -Logging, burning, grazing; -Herbicide, fertilizer treatment; -Slash/brush control, cultivation; -Access planning and management; -Collision mortality management (fencing, underpass, snow clearing); -Winter feeding (restricted).	Elk-Flathead Operational Wildlife Plan. Prepared Jointly by the Planning and Assessment Branch and Cranbrook Wildlife Branch, MOE. December, 1987. Page 13, and Appendix 1, Page 1-2.

LU #	**Drainage** (if applicable)	**Topic**	**Key resource values**	**Management direction** (existing or recommended)	**Reference (Source)** *(Document, date, section and/or pages)*
C38	Upper Elk/ Greenhills/ Fording Wildlife Range Complex	Ungulates – Elk	Upper Elk/Greenhills/ Fording Wildlife Range Complex is elk winter and spring habitat designated for Active Wildlife Management (Category 2). Biophysical Units: • Class 2 – elk, moose, goat winter winter habitat. • Class 3 – all ungulate species winter habitat. • Class 3 – all ungulate species summer range This Range Complex is located in LU: C21, C22, C23 and C38; 1 known mineral lick is located in C21 and 1 known lick is located in C22 (refer to Elk-Flathead Operational Wildlife Plan Map and Cross Reference in the LU Summary background information binder).	Wildlife management would be given equal consideration in specific areas. A combination of the following general management and enhancement techniques would be actively pursued in an interated resource management strategy: -Logging which could benefit/complement wildlife; -Integated silvicultural practices; -Exploration/mining reclamation; -Access planning; -Impact management activities negotiated through the Mine Development Review Process.	Elk-Flathead Operational Wildlife Plan. Prepared Jointly by the Planning and Assessment Branch and Cranbrook Wildlife Branch, MOE. December, 1987. Page 13, and Appendix 1, Page 1-3.
C38	CORE polygon 1-1	Coal Mining	• Medium and high value coal lands are located throughout the LU C38 except the area east of the Fording River at Fording Mountain. • In LU C38, the northernmost reaches of the high value, exposed coal bearing lands of the Crowsnest coalfield subside and the Elk Valley coalfield initiates. • The Elk Valley coal field stretches from Sheep Mountain and Alexander Creek to Elk Lakes Provincial Park. • In LU C38 the majority of the coal lands are on private land.	Definitions: • High value coal lands include the area from the outcrop of the coal bearing strata to its inferred depth limit (p1). • Medium value coal land is a corridor for mining related activities and infrastructure, surrounding the exposed coal bearing strata (high value coal lands) (p1).	Morris, Bob. Resource Estimate: East Kootenay Coalfields, 1994. Pages 1, 4, 7; Fig. 5: E.K. Coal Fields Location Map; and Fig. 7: Coal Value Lands Map. Refer to Black Binder, Coal tab for maps.

Southern Rocky Mountain Management Plan

Landscape Unit Summary
June 18, 2002

Background Information and Cross Reference Tables

I. Background Information

The Southern Rocky Mountain Management Plan (SRMMP) Landscape Unit Summary documents landscape unit values and management direction from the sources listed in Section II below. In addition to the sources, this document describes the L.U. Summary:

- area (Section III);
- the Topic categories by landscape unit (Section IV);
- C.O.R.E. T1 and T2 guideline sets (Section V);
- background information on the Range Unit information (Section VI) and Listed Vertebrate and Vascular Plant Species (Section VII);
- landscape unit relationship to other land unit polygons in the SRMMP area. This is accomplished using three cross reference tables: Table 1. Landscape Unit / KBLUP / CORE Cross Reference; Table 2. Landscape Unit / Range Unit Cross Reference; and Table 3. Landscape Unit / Wildlife Range Complex Cross Reference. (Section VIII).

II. Sources

Sources covered in the L.U. Summary include:

1. KBLUP-Implementation Strategy, 1997.
2. CORE: East Kootenay Regional Table. Land Unit Polygons Records of Information. Volume 3, 1994.
3. Best P.A.S. Report: Identification, Evaluation and Ranking of Areas within the Kootenay Region that meet the Protected Areas Strategy Goals and Criteria, 1993.
4. Flathead National Forest, Forest Plan. 2001 (Montana).
5. Kootenai National Forest, Forest Plan. Vol 1, 1987 (Montana).
6. The Transboundary Flathead: A Critical Landscape for Carnivores in the Rocky Mountains. John L. Weaver, Ph.D., Wildlife Conservation Society, 2001.
7. Cranbrook Forest District Recreation Access Plan, 2000.
8. Cranbrook Forest District Range Unit Mapping and District Range Officer information.
9. SRMMP Focus Group sessions site specific issues.
10. Sheep Mountain Wildlife Management Area Proposed Management Plan. Wildlife Branch, 1991.
11. Listed Vertbrate and Vascular Plant Species Occurring in the Cranbrook Forest District and in the SRMMP Area. Prepared for Ministry of Sustainable Resource Management by Isabelle Houde, M.Sc., R.P.Bio., 2002.
12. East Kootenay Coal Fields Resource Estimate. Prepared for the East Kootenay CORE Table, Coal Sector by R.J. Morris, M.Sc, P.Geo., 1994.
13. Elk-Flathead Operational Wildlife Management Plan. Prepared jointly by the Planning and Assessment Branch and Cranbrook Wildlife Branch, Ministry of Environment. December, 1987.

III. Area

Landscape units covered in the L.U. Summary are those in the SRMMP area and include: LU C13/34 - planning cells T555, T560 and T490, LU C14, C15, C16, C17, C18, C23, C24, C25, C26, and

C27. Entries have also been made for landscape units in the resource evaluation area surrounding the SRMMP area (LU C19-C22, C28, C38), however due to time and funding constraints, LU C20, C21, C22, C28 and C38 will not be completed at this time.

IV. Topic Categories

The main categories under the Topic heading for each landscape unit in the L.U. Summary are as follows:

1. 1993 Best P.A.S. Areas
2. Protected area proposal (C.O.R.E.)
3. Agriculture
4. Access Management
5. Recreation
6. Cultural Heritage
7. Watershed
8. Biodiversity-Rare and Endangered Species
9. Biodiversity
10. Wildlife
11. Ungulates
12. Wide Ranging Carnivores
13. Fisheries
14. Mining
15. Oil and Gas
16. Unacceptable Uses

V. C.O.R.E. Management Guidelines

C.O.R.E. Management Guidelines in the L.U. Summary are from the report, East Kootenay Regional Table: Land Unit Polygons- Record of Information, Volume 3. The T1 guideline set is a "list of 1994 guidelines, policies or processes that are applicable to values of moderate concern in a given area". The T2 guideline set is a "potential list of management tools to address values of a high level of concern in a given area". (E.K. Regional Table, Land Unit Polygons- ROI. Vol. 3).

VI. Range Unit Information

Range Units generally cover more than one landscape unit and do not necessarily follow topographical boundaries. A.U.M.'s quoted in the L.U. Summary are from the Cranbrook District Recreation Access Plan, 2000, and from discussion with Jodie Kekula, District Range Officer on March 15, 2002. The Range Officer information is the most current available. Note that the Range Officer A.U.M.'s are for the entire Range Unit as opposed to landscape unit. LU / Range Unit Cross Reference (Table 1on page 6), indicates which landscape unit the Range Units extend within for the SRMMP area.

VII. Listed Vertebrate and Vascular Plant Species

Listed vertebrate and vascular plant species information in the L.U. Summary is from the report, Listed Vertebrate and Vascular Plant Species Occurring in Cranbrook Forest District and SRMMP Area (2002). Since distribution information for some species includes the entire SRMMP area, and for other species, occurrence has not been confirmed in the SRMMP area, the following approach has been used to incorporate the findings in the L.U. Summary.

1. For listed vertebrate species

- Listed vertebrate species are entered by relevant landscape unit where species distribution information identifies specific locations in the SRMMP area.
- Listed vertebrate species are listed below in the case that species distribution is throughout Cranbrook Forest District and therefore throughout the SRMMP area. These species are not entered in the L.U. Summary.
  - **Westslope Cutthroat Trout** – Blue listed (p 2);
  - **Bull Trout**– Blue listed (p 3) Note: Bull Trout do not occur in upper Bull River;
  - **Grizzly Bear**– Blue listed (p 11);
  - **Wolverine**– Blue listed (p 12);
  - **Bighorn Sheep**– Blue listed (p 13).
- Listed vertebrate species which should be noted are the **Sharp-tailed Grouse** and **Prairie Falcon**. Possible breeding distribution maps show that these species may use the Kootenay River Valley (p 6).

Sharp-tailed Grouse- Blue listed (p 6)

Sharp-tailed Grouse use may extend to open grasslands with adjacent deciduous cover habitats throughout the SRMMP area, however since this habitat type is concentrated in the Sheep Mountain/Wigwam Flats area, the Sharp tailed Grouse is entered in the L.U. Summary in LU C13/34: T555, T560, T490.

Prairie Falcon- **Red listed (p 6)**

Prairie Falcon use of the SRMMP area is unknown: nest sites were not recorded in Cranbrook Forest District (p 6). Prairie Falcon has been entered in LU C13/34: T555, T560, T490 because of potential habitat in the Elk River embankments.

Confirmation of distribution in the SRMMP area is needed in both cases.

2. For listed vascular plants species:

- Listed vascular plants species are entered in the L.U. Summary by landscape unit if they are known to occur in locations within the SRMMP area. Five red listed plants are identified as occurring in the SRMMP area and include:

Large-flowered Brickellia (p 17) in LU C16 &18;
Least Bladder Milk-vetch (p 17) in LU C18;

Pinewood Peavine (p 18) in LU C13/34 Sheep Mt/Wigwam Flats;

Suskdorf's Broomrape (p 18) in LUC26-28; and

Howell's Quillwort (p 21) in LUC18.

- Listed vascular plants species are not entered in the spreadsheet in the case that they are described as rare in southeastern B.C. and are not confirmed as occurring in Cranbrook Forest District or the SRMMP area.

  For the complete list of rare species refer to the report pages 14-21.
- Listed vascular plants species which should be noted are **Hooker's Townsendia** and **Meadow Arnica**.

Distribution information describes the general vicinity of the SRMMP area, i.e. "known from several locations in S.E. B.C." and "Rockies- only seven specimens found in B.C.", respectively (p 20), however since specific locations are not identified, these two plants are noted here but are not entered in the LU Summary.

*All page number references in this section are to the report Listed Vertebrate and Vascular Plant Species in Cranbrook Forest District and SRMMP Area (2002).

VIII. Cross Reference Tables

Table 1: Landscape Unit / KBLUP / CORE Cross Reference

Landscape Unit	**KBLUP-IS** Resource Management Zone	**CORE** Polygon
13 (T555/T560) 34 (T490)	*C-I04* *C-I05*	1-1 Integrated 1-1 Integrated
14	C-S06 C-S06	1-12 Special 1-5 Special
15	C-I04 C-S06 (W035, W120, W125, W130)	1-1 Integrated 1-1 Integrated
16	*C-I04* C-S05 (F005, F037, F085, F090, F095,F105, F115) C-E04	1-2 Integrated 1-3 Special 1-11 Dedicated (Harvey)
17	C-S05 *C-I04* *C-I04* *Private* *Private*	1-3 Special (SE corner) 2-3 Integrated 2-4 Integrated 2-2 (Shell-Elkview-Dominion Block) 2-5 (Shell Lodgepole Blk)
18	C-S05 C-S05 C-S05 *C-I03*	1-3 Special 1-6(a) Special- no Record of Information 1-6 Protected (Ak-Kish) 1-4 Integrated
19	C-E02 CPR block C-E03 Private C-I04 C-I04	2-9 Dedicated 2-6 Dedicated-no Record 2-2 Private 2-3 Integrated 2-4 Integrated
23	C-S01	3-3 Special

	C-E01 Private	3-2 Dedicated Private
24	*C-I01* C-E02 Private east of Elk R.	2-1 Integrated 2-9 Dedicated Private
25	*C-I01*	4-2 Integrated
27	C-I01	4-1 Integrated

Table 2: Landscape Unit / Range Unit Cross Reference

Range Unit boundaries do not correspond to landscape unit boundaries. Table 1 specifies which Range Unit(s) extend into the stated landscape unit only.

Landscape Unit	Range Unit
13 (T555/T560)	Wigwam
34 (T490)	Waldo
14	Wigwam
15	Wigwam Fernie
16	Flathead
17	Flathead
18	Flathead
19	Corbin. No range agreement holders
23	Upper Elk
24	Wigwam Fernie Spruce Olsen
25	Burton North Upper Sand
27	Bull River

Table 3: Landscape Unit / Wildlife Range Complex Cross Reference

Based on the Elk-Flathead Operational Wildlife Plan, Fig. 2, Page 12 and Fig 3, Page 13.

Landscape Unit	**Elk-Flathead Operational Planning Unit**	**Wildlife Range Complex**	**Wildlife Management Designation**
13 & 34 T555/T560/T490	*Wigwam*	Mt. Broadwood/Wigwam Critical habitat for bighorn sheep and elk	Intensive
14	Wigwam	Upper Wigwam. Critical habitat for elk	Active
15	*Wigwam*	Mt. Broadwood/Wigwam Critical habitat for sheep and elk	Intensive
15	Wigwam	Upper Wigwam Critical habitat for elk	Active
16	Flathead	Flathead Critical habitat for elk	Active
17	*Flathead*	No Range Complex	Passive
18	Flathead	Flathead Critical habitat for elk	Active
19	Elk Valley	Natal/Michel/Leach Critical habitat for elk	Intensive
20	Elk Valley	Natal/Michel/Leach Critical habitat for elk	Intensive
20	Elk Valley	East Side Critical habitat for sheep and elk	Intensive
21	Elk Valley	East Side Critical habitat for sheep and elk	Intensive
21	Elk Valley	Upper Elk/Greenhills/Fording Critical habitat for elk	Active
22	Elk Valley	Upper Elk/Greenhills/Fording	Active

		Critical habitat for elk	
22	Elk Valley	West Side Critical habitat for bighorn sheep	Intensive
23	Elk Valley	West Side Critical habitat for bighorn sheep	Intensive
23	Elk Valley	Grave Prairie Critical habitat for elk	Intensive
23	Elk Valley	Upper Elk/Greenhills/Fording Critical habitat for elk	Active
24	Elk Valley	Lower Elk Critical habitat for elk	Active
24	*Wigwam*	Mt. Broadwood/Wigwam Critical habitat for sheep and elk	Intensive
38	Elk Valley	Natal/Michel/Leach Critical habitat for elk	Intensive
38	Elk Valley	Grave Prairie-elk critical habitat	Intensive

Table 3 Note:

Management activities associated with Intensive and Active Wildlife Management Designations are provided in L.U. Summary with the associated Wildlife Range Complexes. The management activities are excerpted from the Elk-Flathead Operational Wildlife Plan, Appendix 1, Pages 1-2 and 1-3.

SOUTHERN ROCKY MOUNTAIN MANAGEMENT PLAN

APPENDIX 19.0

SOCIO-ECONOMIC ASSESSMENT / ENVIRONMENTAL ACCOUNTS ASSESSMENT

Socio-Economic Base Case
Base Case Environmental Assessment
Socio-Economic Assessment of the Public Review Draft

DRAFT

SOCIO-ECONOMIC BASE CASE FOR THE

SOUTHERN ROCKY MOUNTAIN MANAGEMENT PLAN (SRMMP)

Submitted by

Gary Holman
Consulting Economist

and

Pierce Lefebvre Consulting

DRAFT FOR DISCUSSION PURPOSES

September 17, 2002

TABLE OF CONTENTS

1. INTRODUCTION AND GEOGRAPHIC SETTING 4
1.1. Introduction 4
1.2. Geographic Setting 5

2. POPULATION 7
2.1. Current Population and Historical Trends 7
2.2. Anticipated Population and Trends 8

3. ECONOMIC STRUCTURE **9**
3.1. Current Economic Structure and Historical Trends **9**
  3.1.1. Labour Force 9
  3.1.2. Economic Dependency 13
3.2. More Recent Trends in Economic Structure **17**
3.3. Anticipated Trends in Economic Structure **17**

4. BASE CASE FOR KEY ECONOMIC SECTORS **20**
4.1. Mining and Energy **20**
  4.1.1. Current Activity and Historical Trends 20
    Coal Resources and Coal Mining 20
    Mineral Exploration Activity 23
    Economic Impacts of Mineral Exploration and Mining 28
  4.1.2. Anticipated Trends 30
    Industry Trends 30
    Land Use Planning Issues 31
4.2. Forestry **33**
  4.2.1. Current Activity and Historical Trends 34
    Land Area and THLB 34
    AAC for the Cranbrook TSA 35
    Timber Harvest 37
    Major Licensees and Processing Facilities 38
    Employment Coefficients 40
    Summary of Economic Impacts from Forest Industry 41
    Christmas Tree Industry 42
  4.2.2. Anticipated Trends 43
    Long Term AAC 43
    Industry Trends 44
    Trade Disputes with the U.S. and Changes in Government Policy 45
    Implementation of the Kootenay Boundary Land Use Plan 45
4.3. Tourism and Recreation **46**
  4.3.1. Current Activity and Historical Trends 47
    Visitor Characteristics 48
    Commercial Facilities 49
    Guide Outfitting / Other Commercial Backcountry Recreation Operators 50
    Public Recreation 51
    Scenic Resources 52
  4.3.2. Anticipated Trends 53
4.4. Agriculture / Ranching **55**
  4.4.1. Current Activity and Historical Trends 55
  4.4.2. Anticipated Trends 56
4.5. Trapping **56**
  4.5.1. Current Activity and Historical Trends 56
  4.5.2. Anticipated Trends 56

5. FIRST NATIONS 58
5.1. Population and Traditional Territories 58
5.2. Treaty Negotiations 59

6. REFERENCES 61

LIST OF TABLES

Table 1: Southern Rocky Mountain Management Plan Area Summary 5
Table 2: Population by Selected Communities Within the Resource Evaluation Area and East Kootenay Regional District (1981-2001) 8
Table 3: Labour Force by Industry and Community in the Southern Rocky Mountain Resource Evaluation Area: 1996 10
Table 4: Labour Force by Industry and Community in the Southern Rocky Mountain Resource Evaluation Area: 1981 11
Table 5: % Change In Labour Force By Industry and Community in the Southern Rocky Mountain Resource Evaluation Area: From 1981-1996 12
Table 6: Basic Sector Employment and Income in the Southern Rocky Mountain Resource Evaluation Area: (1996) 15
Table 7: East Kootenay Operating Coal Mines 22
Table 8: Mineral Potential for the Resource Evaluation Area 28
Table 9: Summary Economic Impacts from Mining and Exploration in the Resource Evaluation Area 29
Table 10: Area and THLB for the Cranbrook Forest District and the Plan Area 34
Table 11: Changes to AAC for Cranbrook TSA, 1980 to 2001 36
Table 12: AAC Apportionment for the Cranbrook TSA 36
Table 13: Volume and Average Value Billed for the Cranbrook TSA, 1995 to 2001 37
Table 14: Employment Coefficients Per 1000 m^3 of Wood Harvested and Processed 41
Table 15: Estimates of Annual Forest Industry Economic Impacts 42
Table 16: Visitor Profile (%) Southern Rockies, 1995-96 49

LIST OF FIGURES

Figure 1: Percentage Change In Labour Force By Industry and Community in the Southern Rocky Mountain Resource Evaluation Area: 1981-1996 11
Figure 2: Employment Dependency in the Southern Rocky Mountain Resource Evaluation Area: (1996) 15

Figure 3: Income Dependency in the Southern Rocky Mountain Resource Evaluation Area: (1996) 15
Figure 4: East Kootenay Coal Production and Employment 22
Figure 5: Historical Production and Mine Gate Selling Price in B.C. 22
Figure 6: Kootenay Mineral Exploration Expenditures 23
Figure 7: B.C. Mineral Exploration Expenditures 24
Figure 8: B.C. Mineral Price Index (1986=100) 25
Figure 9: Costs of Producing Lumber by World Supply Regions ($ per mfbm) 43

LIST OF APPENDICES

APPENDIX 1. CRANBROOK FOREST DISTRICT BILLING HISTORY 63
APPENDIX 2. FOREST INDUSTRY IMPACTS 64
APPENDIX 3. CHARACTERISTICS OF THE TIMBER HARVESTING LAND BASE 68
APPENDIX 4. MINING INDUSTRY IMPACTS 69
APPENDIX 5. RESOURCE EVALUATION AREA MINING AND ENERGY GIS DATA 70
APPENDIX 6. ARIS EXPLORATION EXPENDITURES 72

1. INTRODUCTION AND GEOGRAPHIC SETTING

1.1. INTRODUCTION

In November, 2001, the Province decided to rescind the Order in Council establishing the former the Southern Rocky Mountain Conservation Area. Government also established the Southern Rocky Mountain Management Plan (SRMMP) to make recommendations regarding Crown land use and management for the area defined roughly by the boundaries of the rescinded Conservation Area. As part of the planning process, a socio-economic "base case" (which includes the management direction contained in the Kootenay Boundary Land Use Plan or KBLUP Implementation Strategy) is required to document current socio-economic conditions and anticipated trends in the short and long term that are expected to occur in the absence of the SRMMP. This report and a similar analysis being undertaken for environmental values, will serve as benchmarks for the evaluation of possible land use changes considered by the SRMMP. The base case research is directed by the SRMMP Project Team, a group of planners with the Ministry of Sustainable Resource Management.

An attempt has been made to keep the base case report very concise, and to focus on historical and anticipated trends in those sectors that could be most directly affected by changes in land and resource management. It is important to recognize that the Plan Area economy is influenced by a number of factors other than land use, such as other government policies and regulations and international commodity markets. The Treaty process is also part of the base case, and the SRMMP is without prejudice to this process.

This report provides a socio-economic overview at the Plan Area level, reflecting the regional and strategic nature of the planning exercise, as well as data limitations. These factors limit the extent of socio-economic analysis for specific communities. It is also important to understand that the purpose of the SRMMP is to refine and clarify existing direction from the KBLUP Implementation Strategy and Higher Level Plan. There will be no new protected areas, and therefore, the impacts of the Plan will be much more incremental in nature than the original KBLUP.

Anticipated future trends can be quantified for population and for some resources (e.g. timber harvest levels). However, trends for most sectors, and the overall economic structure must be more qualitative in nature, based on historical trends, existing reports, input from the Project Team and study team experience. Key data sources for this profile include:

- data, studies and comments provided by the Project Team, including Geographic Information System (GIS) data and the SRMMP *Background Report*[1];
- socio-economic analyses for the Cranbrook TSA Timber Supply Reviews;
- economic dependency estimates, population and other data from BC STATS;

---

[1] *Southern Rocky Mountain Management Plan Background Report*, SRMMP Project Team, March 7, 2002.

- Statistics Canada Census data.

The research for this project was conducted in March 2002. Gary Holman was the project leader and the key consultant for the socio-economic profile of the SRMMP and First Nations communities, and the tourism, recreation, agriculture and trapping sectors. Pierce Lefebvre Consulting prepared the sections on forestry, mining and energy.

1.2. GEOGRAPHIC SETTING[2]

The Plan Area covers the southeast portion of the East Kootenays and extends from the B.C./Montana border north through the Flathead and Wigwam watersheds and portions of the Elk and Bull River watersheds, to the southern boundary of Height of the Rockies Provincial Park. All federal lands, private lands, and Provincial Parks are excluded from the Plan Area.

For socio-economic and environmental evaluation purposes, a larger Resource Evaluation Area is also considered in this report. This Resource Evaluation Area includes the Plan Area, as well as the remainder of the Elk and Bull River watersheds (see attached map). The Resource Evaluation Area covers about one half of the Cranbrook Forest District and encompasses 16 landscape units.

Table 1: Southern Rocky Mountain Management Plan Area Summary

	Total Area (ha)	THLB Area (ha)	Private / Federal Lands (ha)
Resource Evaluation Area[a]	754,463	114,593	149,679
Management Plan Area[b]	440,614	78,179	68,386

Source: Cranbrook Forest District PCRS Reports by Landscape Unit.

(a) Resource Evaluation Area: LU 14-28, 38, + planning cells T490, T555, T560 in LU 13 and 34.

(b) Plan Area: LU 14-18, 23-26, 27 east of Bull River + planning cells T490, T555, T560 in LU 13 and 34.

The Elk Valley communities of Fernie, Sparwood and Elkford lie within the boundaries of the Resource Evaluation Area, as well as a number of small, unincorporated communities, including Hosmer, Corbin, Cokato, and Natal. The small communities of Elko, Galloway, Grasmere, Caithness and Roosville (the nearest border crossing) lie just outside of the Resource Evaluation Area. The Tobacco Plains Reserve, located on the Canada – US border between Highway 93 and Lake Koocanusa, is the nearest First Nations community to the Resource Evaluation Area. Data on the population and economic structure of the main communities in the Resource Evaluation Area is provided in sections 2 and 3 below.

Highways 3 and 43, and the Canadian Pacific Railway (CPR) form the main transportation corridors running through the Plan Area. Highway 3 and the CPR parallel the Elk River from Elko to Sparwood, where the rail line splits. At Sparwood, one line runs north to Elkford, and the Fording River, Line Creek and Greenhills coal mines, and the other rail line travels southeast paralleling Highway 3 through the Crowsnest Pass, Alberta. At Sparwood, Highway 43 begins and runs north to Elkford.

---

[2] Since completion of the first draft of this document in June, 2002 two small areas, Wigwam Flats and Sheep Mountain (planning cells T490, T555 and T560), have been dropped from both the Plan Area and the Resource Evaluation Area. This change is not reflected in this document.

The closest commercial air services are available at Cranbrook and Calgary. There are recreational air services at the Elko airstrip and the Elk Valley Airport (8 km north of Sparwood), where small airplane and helicopter charter services are available. There is now a helicopter service available between Fernie and nearby centres such as Kimberley and Calgary. There are two passenger bus lines providing services to and from the Elk Valley. There is no passenger or freight service available by rail.

The Trans Canada natural gas pipeline enters the Plan Area north of Sheep Mountain, and continues north from the Wigwam River to Highway 3, then east through Phillips Pass into Alberta. Subsidiary lines provide service to Elko, Fernie, and Sparwood. The 500kV hydro transmission line passes through the Plan Area to the Sparwood sub-station from Elko, then through Phillips Pass into Alberta. Lower voltage lines distribute power from the Sparwood sub-station to the local communities. Other communication / utility lines such as telephone and hydro distribution, generally follow the transportation corridor. There are also a number of communication towers located throughout the Plan and Resource Evaluation Areas.

2. POPULATION

2.1. CURRENT POPULATION AND HISTORICAL TRENDS

The population of the Resource Evaluation Area, as estimated by the latest Census, is about 11,000 in 2001, which is somewhat less than the population of 13,000 in 1981.[3] This represents a negative growth rate averaging about –1.0% per year over the 1981-2001 period. Table 2 summarizes population data for selected communities within the Resource Evaluation Area over this period.

As Table 2 shows, population for each of the communities and the rural area (CSD A) within the Resource Evaluation Area has decreased over the 1981-2001 period. The main reason for this decline appears to be the reductions in the labour force in the coal mines in the area. For the East Kootenay Regional District as a whole, population did increase over this period, albeit at a relatively slow rate of 0.5% per year. Population data do not include temporary residents, for example in Fernie, at various times of the year.

There is no First Nations community in the Resource Evaluation Area, although there are some non-status aboriginals (i.e., living off-reserve). The nearest First Nations community is the Tobacco Plains band, located just west of the Resource Evaluation Area boundary, east of Lake Koocanusa, with a population of roughly 100.[4]

---

[3] The Resource Evaluation Area is defined as the communities of Fernie, Sparwood and Elkford, as well as Census Subdivision A (the rural portion). However, for purposes of other socio-economic data such as labour force, only the three communities in the Elk Valley are used. This excludes the rural portion of the Resource Evaluation Area (CSD A), because due to recent boundary changes for CSDs, socio-economic data are not available on a consistent basis over time.

[4] Pers. comm. with Rosemary Nicholas, Ktunaxa Tribal Council. Estimate excludes non-status First Nations.

Table 2: Population by Selected Communities Within the Resource Evaluation Area and East Kootenay Regional District (1981-2001)

	1981	1991	2001	Avg. Annual Growth Rate 1981-2001[b]
Elkford	3,225	2,924	2,589	-0.9%
Sparwood	4,270	4,326	3,812	-0.5%
Fernie	5,584	5,146	4,611	-0.8%
Census Subdivision A[a]	1,994	1,716	1,837	-0.4%
Resource Evaluation Area	15,073	14,112	12,849	-0.7%
Cranbrook	16,347	16,887	18,476	0.7%
Kimberley	7,547	6,689	6,484	-0.7%
East Kootenay Regional District	55,141	53,746	56,291	0.1%

Source: BC STATS, June, 2001 and 2001 Census.

(a) Census estimate available for CSD A, which is roughly consistent with Resource Evaluation Area boundary, only for 2001 and 1996 (1,790). Estimates for earlier years based on population trends in Census Subdivision C (now defined as CSD A and B) for which 1981-2001 data are available.

(b) Trends should be regarded with caution because of boundary adjustments in Fernie (expansion) and the redefinition of CSD C (equivalent to CSD A+B), after 1996.

2.2. ANTICIPATED POPULATION AND TRENDS

Forecasts by BC STATS indicate that population in the Resource Evaluation Area will grow slowly by about 0.7% per year until 2011, and then decline slowly thereafter. This compares to the growth rate projected for the East Kootenay Regional District as a whole of about 0.5% per year.[5] As occurred historically, most of the population increase throughout the Plan Area is expected to be due to in-migration.

BC STATS forecasts also indicate that population aging (i.e. the increasing number of elderly residents as a proportion of total population) is expected to continue in the Resource Evaluation Area, suggesting that retirement incomes in the Resource Evaluation Area will continue to grow as a proportion of total income. Increasing retirement incomes will continue to be a growth factor in the Resource Evaluation Area economy.

---

[5] Projections based on BC STATS population forecasts using the P.E.O.P.L.E. model by Local Health Area as of June, 2001.

3. ECONOMIC STRUCTURE

3.1. CURRENT ECONOMIC STRUCTURE AND HISTORICAL TRENDS

3.1.1. Labour Force

Census labour force data provide a good indication of longer term trends in the economic structure of Resource Evaluation Area communities. Table 3 presents labour force trends for the 1981-96 period for the three main communities within the Resource Evaluation Area: Fernie, Sparwood and Elkford. Labour force data from the 2001 Census survey will not be available until February, 2003.

These data include both employed and unemployed, and allocates the labour force participants to various industries on the basis of their primary activity. However, these data do not fully reflect the economic contribution of part-time activities (e.g. farming, trapping), or differences in unemployment and seasonality among various industries. ***Also note that labour force data are based on location of residence, not work location, i.e., the data will omit those who work within the Resource Evaluation Area but live outside the area. Conversely, it will include residents of the Resource Evaluation Area who work outside the area. Therefore, labour force trends can partly reflect movement of workers within, or in and out of the Resource Evaluation Area. Estimates of the employment and other economic impacts of resources within the Resource Evaluation Area (i.e., for resident and non-resident workers) are provided in section 4 below for various sectors.***

As shown in Table 3, the service sector in 1996 is a larger employer than the goods-producing sector within each of the communities in the Resource Evaluation Area, a reversal of the situation in 1981.[6] This does not reflect lower service sector wages, on average, than for goods-producing industries, and also the fact that some service industries are somewhat dependent on incomes generated by basic goods-producing sectors (see discussion of economic dependency estimates below).

Total labour force in the Resource Evaluation Area (Table 4) decreased from about 6,160 in 1981 to about 5,835 in 1996, an average annual decline of almost –0.4% per year over this period.[7] The total labour force in goods-producing industries decreased significantly in absolute terms and as a proportion of total labour force, from 58% to 42% over the 1981-1996 period. This was due mainly to reductions in mining, wood manufacturing, and construction. Some goods-producing sectors, such as logging / forestry services and utilities, actually increased in absolute and proportional terms from 1981-1996.

---

[6] For labour force data, the Resource Evaluation Area is estimated as the sum of the three incorporated communities (Fernie, Sparwood and Elkford). Labour force breakdowns for the rural portion of the Resource Evaluation Area (CSD A) are not yet available. Assuming a similar labour force / population ratio of about 50% as for CSD C, total labour force in 1996 CSD A is estimated at roughly 950. The labour force for the Tobacco Plains band, the nearest First Nations community to the Resource Evaluation Area, is estimated at roughly 50 in 1996.

[7] These are estimates of total labour force, including labour force not allocated to specific industries. Data in Table 2 exclude unallocated labour force.

Service sector employment increased significantly in absolute terms and proportionally, from 42% to 58%, from 1981 to 1996, especially in the accommodation and food industries, wholesale / retail trade, finance, real estate and other business services, the public sector and transportation and storage.[8] All of these sectors are strongly linked with population growth and aging, and increases in the tourism and knowledge-based industries, which are occurring in the Resource Evaluation Area and throughout B.C.

As shown in Figure 1 and Table 5, the absolute and proportional shift from goods to service industries is evident in all of the communities. Labour force trends for the rural area in and adjacent to the Resource Evaluation Area (i.e., Census Subdivision C) show a similar pattern. The data also shows that the service sector labour force grew strongly in absolute terms even though total goods-producing labour force declined significantly.

Table 3: Labour Force by Industry and Community in the Southern Rocky Mountain Resource Evaluation Area: 1996

Industry	Fernie	Sparwood	Elkford	Total Resource Evaluation Area
Agriculture	10 (0)	0 (0)	0 (0)	10 (0)
Fishing & Trapping	0 (0)	10 (1)	0 (0)	10 (0)
Forestry	115 (5)	130 (7)	0 (0)	245 (4)
Logging & Forestry	75 (3)	130 (7)	0 (0)	205 (4)
Wood Manufacturing	40 (2)	0 (0)	0 (0)	40 (1)
Paper & Allied	0 (0)	0 (0)	0 (0)	0 (0)
Mining & Energy	470 (19)	495 (28)	795 (53)	1760 (30)
Other Manufacturing	45 (2)	25 (1)	20 (1)	90 (2)
Construction	125 (5)	95 (5)	60 (4)	280 (5)
Utilities	15 (1)	10 (1)	0 (0)	25 (0)
TOTAL GOODS PRODUCING	780 (31)	765 (43)	875 (59)	2420 (42)
Transportation, Storage	70 (3)	125 (7)	10 (1)	205 (4)
Communications	15 (1)	10 (1)	10 (1)	35 (1)
Wholesale / Retail Trade	445 (18)	290 (16)	170 (11)	905 (16)
Accommodation & Food	280 (11)	155 (9)	90 (6)	525 (9)
Bus. / Pers. / Other Services	420 (17)	165 (9)	150 (10)	735 (17)
Fed. / Prov. Government	535 (21)	285 (16)	190 (13)	1010 (17)
TOTAL SERVICE PRODUCING	1765 (69)	1030 (57)	620 (41)	3415 (58)
TOTAL LABOUR FORCE	2545 (100)	1795 (100)	1495 (100)	5835 (100)

Note: Labour force includes employed and unemployed. The number in brackets indicates the % of total labour force for that area. Figures exclude unallocated labour force.

---

[8] The decline in communications appears to be due to declines in postal service and telephone systems, possibly due to rationalization and technological change in the delivery of such services.

Table 4: Labour Force by Industry and Community in the Southern Rocky Mountain Resource Evaluation Area: 1981

Industry	Fernie	Sparwood	Elkford	Total Resource Evaluation Area
Agriculture	10 (0)	0 (0)	5 (0)	15 (0)
Fishing & Trapping	5 (0)	0 (0)	0 (0)	5 (0)
Forestry	220 (9)	35 (2)	0 (0)	255 (4)
Logging & Forestry	50 (2)	20 (1)	0 (0)	70 (1)
Wood Manufacturing	170 (7)	15 (1)	0 (0)	185 (3)
Paper & Allied	0 (0)	0 (0)	0 (0)	0 (0)
Mining & Energy	590 (23)	870 (45)	1240 (73)	2700 (44)
Other Manufacturing	75 (3)	125 (7)	40 (2)	240 (4)
Construction	165 (7)	115 (6)	70 (4)	350 (6)
Utilities	15 (1)	0 (0)	0 (0)	15 (0)
TOTAL GOODS PRODUCING	1080 (43)	1145 (60)	1355 (80)	3580 (58)
Transportation, Storage	85 (3)	105 (6)	15 (1)	205 (3)
Communications	35 (1)	25 (1)	15 (1)	75 (1)
Wholesale / Retail Trade	395 (16)	180 (9)	55 (3)	630 (10)
Accommodation & Food	160 (6)	120 (6)	75 (4)	355 (6)
Bus. / Pers. / Other Services	270 (11)	145 (8)	55 (3)	470 (8)
Fed. / Prov. Government	515 (20)	205 (11)	125 (7)	845 (14)
TOTAL SERVICE PRODUCING	1460 (57)	780 (40)	340 (20)	2580 (42)
TOTAL LABOUR FORCE	2540 (100)	1925 (100)	1695 (100)	6160 (100)

Note: Labour force includes employed and unemployed. The number in brackets indicates the % of total labour force for that area. Figures exclude unallocated labour force.

Table 5: % Change In Labour Force By Industry and Community in the Southern Rocky Mountain Resource Evaluation Area: From 1981-1996

Industry	Fernie	Sparwood	Elkford	Total Resource Evaluation Area
Agriculture	0%	0%	-100%	-33%
Fishing & Trapping	-100%	(+10)	0%	100%
Forestry	-48%	271%	0%	-4%
Logging & Forestry	50%	550%	0%	193%
Wood Manufacturing	-77%	-100%	0%	-78%
Paper & Allied	0%	0%	0%	0%
Mining & Energy	-20%	-43%	-36%	-35%
Other Manufacturing	-40%	-80%	-59%	-63%
Construction	-24%	-17%	-14%	-20%
Utilities	0 %	(+10)	0%	67%
TOTAL GOODS PRODUCING	-28%	-33%	-35%	-28%
Transportation, Storage	-18%	19%	-33%	0%
Communications	-57%	-60%	-33%	-53%
Wholesale / Retail Trade	13%	61%	209%	44%
Accommodation & Food	75%	29%	20%	48%
Bus. / Pers. / Other Services	56%	14%	173%	56%
Fed. / Prov. Government	4%	39%	52%	20%
TOTAL SERVICE PRODUCING	21%	32%	82%	32%
TOTAL LABOUR FORCE	0%	-7%	-12%	-5%

Note: % estimates exclude reserves. For sectors with zero employment 1981 or 1996, the number inside the bracket means the absolute employment loss or gain over the period.

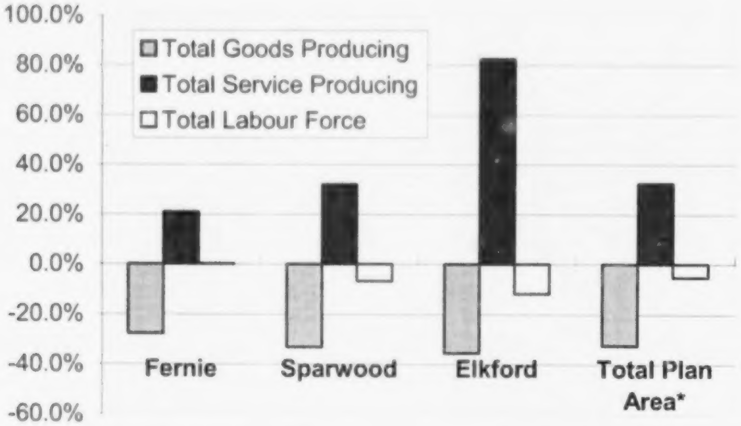


Figure 1 Percentage Change In Labour Force By Industry and Community in the Southern Rocky Mountain Resource Evaluation Area: 1981-1996

3.1.2. Economic Dependency

The Ministry of Finance and Corporate Relations (MFCR) has developed estimates of economic dependency for all regions in B.C., and a number of communities, using 1996 Census data. Economic dependency estimates show the relative importance of different sources of "basic" income, or income flowing into the study region from the outside, which are assumed to drive the local or regional economy. Basic industries include: (i) resource export industries such as forestry and mining, (ii) tourism and government sectors and (iii) sectors supplying industries (i) and (ii). Basic income includes wages and salaries earned in basic industries as well as non-employment sources of income from outside the region (e.g. pension and investment income, government transfer payments). Non-basic sectors are defined as those businesses (e.g. local grocery stores and other retail outlets) which serve local demand generated as a result of basic activities. ***As with labour force data, economic dependency estimates are based on residence not location of work, and do not fully reflect part-time activities or seasonality among various industries.***

Conventional labour force data do not systematically identify basic and non-basic sectors, nor do they identify tourism or non-employment sources of income (e.g. pensions and investment income). Therefore, labour force data do not provide as comprehensive an indication of the relative importance of various sources of livelihood as economic dependency estimates. Note that basic employment does not include the unemployed (unlike labour force which includes employed and unemployed), but does include employment in supplier industries. The economic dependency estimates consider government as a "basic" industry, not because it necessarily generates wealth, but because government spending and employment are determined by a number of factors external to the local economy.[9] Also, some components of government spending and transfers (e.g. social assistance) are inversely related to marginal changes in other basic sectors.

Economic dependency estimates for the three main communities within the Resource Evaluation Area are presented in Table 6 and Figures 2 and 3. Mining, forestry, the public sector and tourism were the largest sources of employment and employment income[10] in the Resource Evaluation Area in 1996. Some of the key findings from Table 6 are as follows:

- Mining is the single largest source of basic earned income (50%) and employment (48%) in the Resource Evaluation Area, followed by the public sector (17% of income and 22% of employment), and tourism (about 5% of income and 15% of employment), and forestry (about 4% of income and 7% of employment).

---

[9] The weak linkage between employment *changes* in resource sectors such as forestry and the government sector is borne out by labour force trends over the 1981-96 period (see Tables 3, 4 and 5). This is not to say that resource sectors do not generate government revenue, but only that the linkage with government employment at the regional level is more indirect.

[10] Although income estimates in Table 6 are after tax, the relative importance of basic sectors would not differ significantly if before tax data were used.

- The differences between income and employment dependencies reflect differences in average wages in various sectors. For example, due to relatively low wages in tourism, this sector comprises a lower proportion of basic income than of employment.[11] Note that tourism, as defined by BC STATS, also includes business travel.
- Construction and other (i.e. miscellaneous) manufacturing and transportation industries together account for about 3% of basic income and 5% of employment in the Resource Evaluation Area.
- Pension, investment income and transfer payments together comprise almost 19% of basic income in the Resource Evaluation Area.

While mining is by far the predominant basic sector in all of the communities in the Resource Evaluation Area, the economic structure of these communities does vary considerably:

- The Elkford economy is almost totally dominated by mining (accounting for 80% of income), with the public sector being the next most important source of income (10%).
- Sparwood is the second most dependent economy on mining (45% of income), but other sectors such as the public sector, tourism and forestry provide a greater degree of diversification.
- The Fernie economy, while also dominated by mining, is more reliant on tourism (9% of income) than the other communities in the Resource Evaluation Area, primarily due to the ski facilities and related development located there. The public sector comprises 22% of employment in Fernie, the largest proportion in the Resource Evaluation Area.
- Data for the smaller, rural communities within the Resource Evaluation Area cannot be separated from data on rural communities just outside the Resource Evaluation Area. However, available data suggest that the rural areas are more dependent on forestry and agriculture than the three main communities.

The tourism and forestry industries in the rural areas and communities adjacent to the Resource Evaluation Area (e.g., Elko, Galloway and Cranbrook) also rely on the timber resources, the wilderness attributes and abundant wildlife populations of the Resource Evaluation Area. Economic dependency data for these areas indicates that they are also more dependent on forestry and agriculture than the three communities in the Elk Valley.

---

[11] These estimates do not take into account the value of gratuities to tourism sector workers, although this would still not likely alter the basic conclusion that average wages in tourism are lower than for industries such as mining and forestry.

Table 6: Basic Sector Employment and Income in the Southern Rocky Mountain Resource Evaluation Area: (1996)

	Forestry	Mining / Energy	Fishing / Trapp.	Agric. / Food	Tourism	Public Sector	Constr.	Other[c]	ONEI[d]	TRAN[e]	Non-Basic	Total
EMPLOYMENT (# of workers)[a,b]												
Fernie	149 (7%)	672 (32%)	0 (0%)	11 (1%)	481 (23%)	567 (27%)	115 (6%)	77 (4%)			467	2,540 (100%)
Sparwood	166 (11)	675 (44)	10 (1)	0 (0)	220 (14)	293 (19)	81 (5)	90 (6)			254	1,790 (100)
Elkford	0 (0)	948 (79)	0 (0)	0 (0)	0 (0)	199 (17)	30 (3)	21 (2)			297	1,495 (100)
Total Resource Evaluation Area[f]	315 (7)	2,295 (48)	10 (0)	11 (0)	701 (15)	1,059 (22)	226 (5)	188 (4)			1,018	5,823 (100)
AFTER TAX INCOME ($millions)[a]												
Fernie	3.3 (7)	23.1 (35)	0.0 (0)	0.0 (0)	5.8 (9)	14.9 (22)	2.7 (4)	1.3 (2)	9.4 (14)	6.3 (9)	8.7	75.5
Sparwood	2.8 (5)	23.7 (45)	0.4 (1)	0.0 (0)	2.6 (5)	7.9 (15)	1.9 (4)	1.7 (3)	7.4 (14)	4.2 (8)	4.6	57.4
Elkford	0.0 (0)	36.1 (80)	0.0 (0)	0.0 (0)	0.0 (0)	4.7 (10)	0.5 (1)	0.1 (0)	2.4 (5)	1.4 (3)	4.7	49.9
Total Resource Evaluation Area[f]	6.1 (4)	82.9 (50)	0.4 (0)	0.0 (0)	8.4 (5)	27.5 (17)	5.1 (3)	3.1 (2)	19.2 (12)	11.9 (7)	18.0	182.8

Source: Ministry of Finance and Corporate Relations

Notes:

(a) "Primary" sectors (i.e. Forestry, Mining/Energy, Fishing/Trapp, Agric/Food) include primary processing. Percentages are of basic employment and income (i.e. of total minus non-basic).

(b) Includes direct employment plus indirect employment in related supplier industries (e.g. forestry includes primary processing)

(c) "Other" includes high tech industries, parts of manufacturing and transportation not already allocated to another basic industry, as well as rural services (i.e. service industries within regional centres that serve the surrounding rural areas).

(d) Primarily investment income and corporate pension plans.

(e) Transfer payments such as employment insurance, income assistance, old age security and Canada Pension payments.

(f) The Resource Evaluation Area is defined as the incorporated communities within the boundaries of the Resource Evaluation Area (i.e., excludes smaller, rural communities).

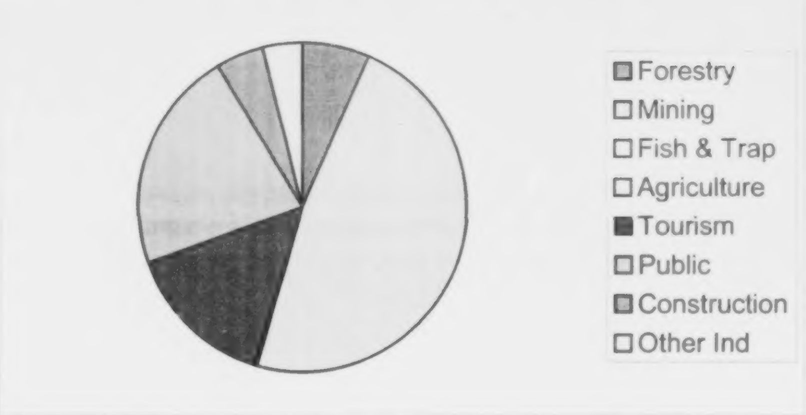
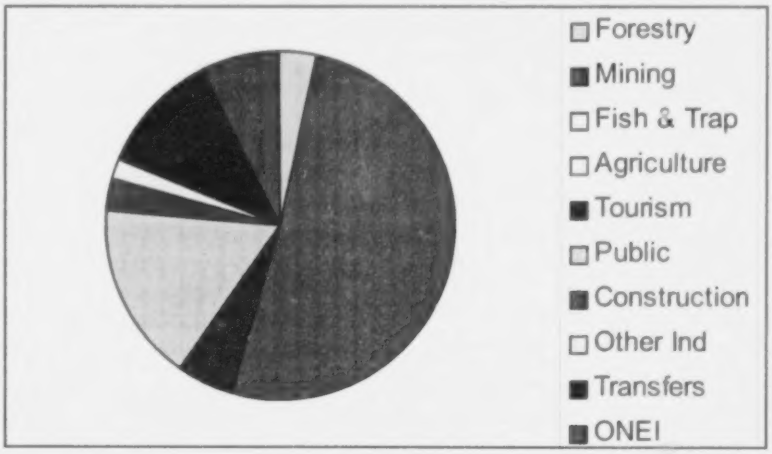


Figure 2: Employment Dependency in the Southern Rocky Mountain Resource Evaluation Area: (1996)

Figure 3: Income Dependency in the Southern Rocky Mountain Resource Evaluation Area: (1996)



3.2. MORE RECENT TRENDS IN ECONOMIC STRUCTURE

More recent trends for some of the key sectors in the Resource Evaluation Area economy are discussed in section 4 below, but a brief summary is outlined here. Information regarding population growth and more recent trends in the Resource Evaluation Area and in the broader East Kootenay region suggest that the economic structure reflected in 1996 labour force and economic dependency data are still generally valid today, although tourism has grown considerably and would comprise a much larger proportion of local income and employment. Based on the most recent Census data, population in the Resource Evaluation Area communities has continued to decline slightly over the 1996-2001 period.

As indicated in section 4.3 below, strong growth in the tourism sector has continued since 1996. More recent data on room revenue for the East Kootenay region, skier volumes and employment at Fernie Alpine Resort, visits to national and provincial parks, highway traffic counts, increased snowmobile use, and increased purchases of recreational property in or adjacent to the Resource Evaluation Area, all suggest continued growth in tourism and related service sectors. Recently completed investments in hotel and other tourism-related businesses (particularly in Fernie), but also in new commercial backcountry operations, also indicate continued strong growth in this sector. The amenities and lifestyle of the Resource Evaluation Area are becoming increasingly popular for buyers of recreation properties, especially Alberta residents. Recent building permit data for Fernie and to a lesser extent Sparwood, reflect strong construction activity in residential and commercial sectors. Tourism-related investments adjacent to the Resource Evaluation Area (e.g., Kimberley Alpine Resort), also have had spill-over impacts on the Resource Evaluation Area employment and the economy.

The recent downsizing in the provincial government has had only a minor offsetting effect in service sector employment, but these cutbacks have not yet been fully implemented.

The primary resource / goods-producing sectors in the Resource Evaluation Area, particularly coal mining, remain an important driving force. Mining employment has increased somewhat due to increasing coal production. Forestry continues to be an important economic driver, but has declined in absolute and relative importance in the Cranbrook Forest District since 1996, in part as a result of consolidation and technological change in sawmilling. However, since most sawmilling takes place outside the Resource Evaluation Area in Elko, Galloway and Cranbrook, it is not clear what forestry employment trends have been for residents of the Resource Evaluation Area itself.

3.3. ANTICIPATED TRENDS IN ECONOMIC STRUCTURE

It is likely that the historical trends in the structure of the Resource Evaluation Area economy will continue for the foreseeable future, including the increasing importance of service sectors compared to goods-producing sectors. These structural trends, mirrored by similar trends elsewhere in the Province, will be reinforced by tourism growth, population growth and aging, improvements in transportation and communications infrastructure, and technological change. Economic development organizations at the local, regional, provincial and federal level (including non-government organizations such as the Columbia Basin Trust) are actively promoting economic diversification. These trends are of course subject to considerable uncertainty, particularly regarding markets for and production of coal, and potential developments in the minerals and energy sector.

Mining will continue to be the dominant industry in the Resource Evaluation Area economy for the foreseeable future. Forestry is likely to continue declining in relative and perhaps absolute importance due to harvest constraints, technological change and consolidation, although provincial growth trends in value-added and supporting technical services could also occur in the Resource Evaluation Area.

The outlook for mining and energy is much more unpredictable due to the hidden nature of the resource. The relative importance of employment at existing coal mines may not increase, if only because of strong growth in tourism and the service sector. A major energy or mineral development (e.g. coal or metal mine) could result in significant economic impacts within the Study Area and reversal of historical trends, although the likelihood and timing of such developments are very uncertain.

The strong historical growth in tourism, the number of tourism-related investments being proposed (including backcountry recreation operations), the proximity of the area to Alberta and the US borders, and the fact that all of the communities in the Resource Evaluation Area include tourism as a key economic development priority,[12] suggest that this sector will continue to grow strongly. The Fernie ski resort will continue to be the driving factor within the tourism sector in the Resource Evaluation Area. Tourism development outside the Resource Evaluation Area (including developments at Kimberley Alpine Resort and the upgrading of the Cranbrook airport) will have spill-over effects on, and reinforce tourism growth in, the Resource Evaluation Area.

In-migration of "urban refugees" and retirees from Alberta and elsewhere in BC, will likely continue, and with them, associated pension and investment incomes and displacement of imported goods and services by new entrepreneurs. Per capita income may decline, given the shift to lower wage service industries (although this is not supported by available data)[13], but increasing demand for recreational property could still increase the wealth of Resource Evaluation Area property owners. Participation of women in the economy (e.g. as entrepreneurs) and their contribution to family incomes may also grow, reflecting continued growth in the service sectors in which women have traditionally participated and the need to supplement family incomes.

---

[12] *Research and Assessment for a Kootenay-Boundary Economic Transition Plan*, P. Levy and Associates, September, 1997.

[13] Data from BC STATS' *Community Facts* indicate that average incomes reflected in tax returns over the 1993-98 period have steadily increased in all communities in the Resource Evaluation Area.

Small businesses (including home-based businesses) and knowledge-based or "footloose" industries that are increasingly less reliant on location in large population centres, will continue to be an important source of employment growth, reinforced by advances in communications technology.[14] For these sectors, quality of life considerations such as access to recreation opportunities, availability of health and education services, and environmental amenities such as viewscapes and parks, are important competitive factors in location and investment decisions.[15] The government sector will continue to be a stabilizing factor in the economy of the Resource Evaluation Area. While employment in this sector may decline somewhat over the next several years due to provincial downsizing, in the longer term, the local, provincial and federal government sector will likely keep pace with a growing population and economy.

---

[14] Fernie Chamber of Commerce website, op. cit. See also *Kootenay Economic Development Magazine*, March, 2002 regarding the telecommunications initiative by the District of Sparwood.

[15] The correlation between environmental and other amenities and regional economic growth has been an increasing subject of research. See *Environmental Quality and Regional Economic Development*, Coast Writers Research and Communication, 1998; *Environmental Well-Being and Environmental Protection in the Pacific Northwest*, a consensus report by Pacific Northwest economists, December, 1995; and *Lost Landscapes and Failed Economies: A Search for a Value of Place*, T. Power, 1996.

4. BASE CASE FOR KEY ECONOMIC SECTORS

4.1. MINING AND ENERGY

4.1.1. Current Activity and Historical Trends

Coal Resources and Coal Mining

The East Kootenay region has a long history of coal mining activity, producing some 460 million tons of coal since 1898. Five of the seven coal mines currently producing in B.C. are located in the Crowsnest and Elk Valley coal fields. They account for about 87% of the annual coal production in the province, and produced coal valued at about $1 Billion Cdn. in 2001.

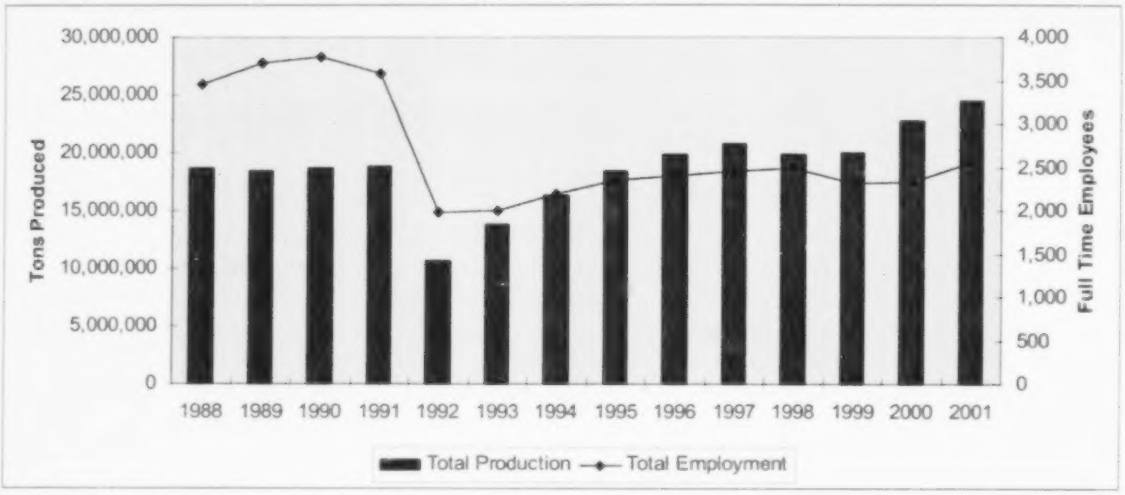
The communities of Fernie, Sparwood and Elkford are highly dependent on coal mining activity to create employment opportunities as well as to support social, economic and physical infrastructure. Most of the coal mine employees live in the communities near the mine sites, including the Crowsnest Pass communities in Alberta, but some commute from as far as Lethbridge and Calgary. Direct coal mining employment peaked in 1990 in the East Kootenays, and then suffered a dramatic decline in 1992 when both production and employment fell by about 45%. The closure of Westar's Balmer operations near Sparwood resulted in over 1200 layoffs and had serious economic consequences for Elk Valley communities. For a short period in 1992, three of the five currently operating mines were closed due to financial difficulty and/or strikes.

Since 1992, changes in mining techniques and technological advances have led to major increases in labour productivity in open pit coal mining. Teck Corporation reopened the Balmer operations in 1993 with far fewer employees, renaming it Elkview Coal Corporation, and Fording/Pohang purchased and reopened the Greenhills mine. Fording later took over the Byron Creek operations, renaming it Fording Coal Mountain. Over the past ten years total coal production from the East Kootenay coalfields has grown substantially to surpass the previous peak levels of the 1980s. Declining demand and prices in the late 1990s have been countered by major productivity improvements, which have allowed production to continue to expand.

The coal produced from the East Kootenay coalfields is exported to several overseas markets, with Japan taking the largest share. Prices for B.C. coal peaked in the early 1980s and after declining through the rest of the 1980s, levelled out for most of the 1990s. In 1999 and 2000, however, supply and demand imbalances led to sharp price declines, resulting in the premature closure of the Quintette mine in northeast B.C., and the deferral of development of other coal resources in the province (the Bullmoose mine operated by Teck Cominco in northeast B.C. is scheduled to close in 2003 upon exhausting reserves).

The East Kootenay coal mines have proven and probable reserves to support production at current levels for many years, and in the case of Elkview, several decades. In addition there are expansive measured, indicated and inferred resources outside of currently planned mining areas which could substantially add to the economic life of each of the five existing mines or support new mine development projects.

Figure 4 East Kootenay Coal Production and Employment



Source: B.C. Ministry of Energy and Mines

Table 7: East Kootenay Operating Coal Mines

	Year Opened	Operator	Production Capacity (mil.tonnes)[a]	Employees		Proven & Probable Reserves (mil.tonnes)[d]	Mine life with existing reserves[e]
				1994[b]	2000[c]		
Line Creek	1981	Luscar / CONSol	3.8	487	401	62	19
Fording River	1968	Fording	10.0	936	747	217	24
Coal Mountain	1908/ 1974	Fording	2.5	91	172	33	13
Greenhills	1981	Fording / Pohang	4.5	270	350	110	24
Elkview	1968	Teck Cominco	6.0	307	502	260	43
			26.8	2,091	2,172	682	25

Notes:

a. Production capacity is taken from the 2001 Annual Reports for each operator.

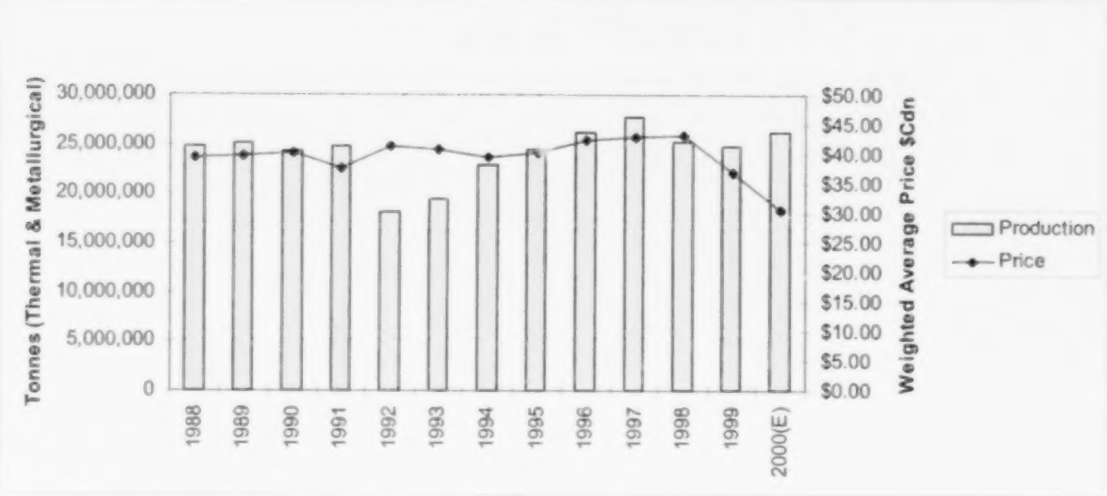
b. 1994 employment figures reported in Cranbrook Timber Supply Area Socio-Economic Analysis, March 1995, Pierce Lefebvre Consulting.

c. 2000 employment figures reported in The Mining Industry in British Columbia - 2000, PricewaterhouseCoopers, May 2001. The BC Ministry of Energy and Mines reports 2000 employment of 2,338, and an increase to 2,563 in 2001.

d. Proven and Probable Reserves are reported in the 2001 Annual Reports for each operator.

e. Remaining Mine Life With Existing Reserves is either taken from the 2001 Annual Reports, or calculated from reserves and capacity.

Figure 5: Historical Production and Mine Gate Selling Price in B.C.



Source: B.C. Ministry of Energy and Mines

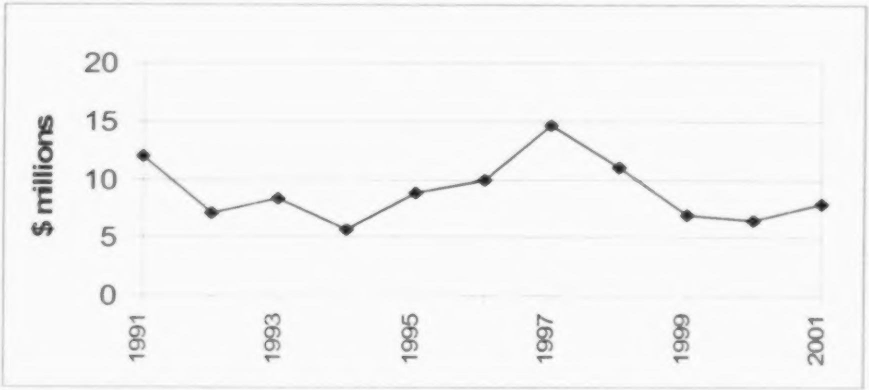
In spite of continuing difficulties in the steel making industry, prices have recovered substantially through 2001, and B.C.'s coal producers are expecting more of the same in 2002. Fording Coal's 2001 Annual Report noted an $8.00 Cdn per ton increase in the average price for its coal from B.C. operations between 2000 and 2001.

Mineral Exploration Activity

Overall Exploration Activity

Exploration expenditures in the Kootenay region (East and West) have averaged $9 million per year between 1991 and 2001, ranging between a high of $14.7 million in 1997 and a low of $5.6 million in 1994.

Figure 6: Kootenay Mineral Exploration Expenditures



Source: B.C. Ministry of Energy and Mines

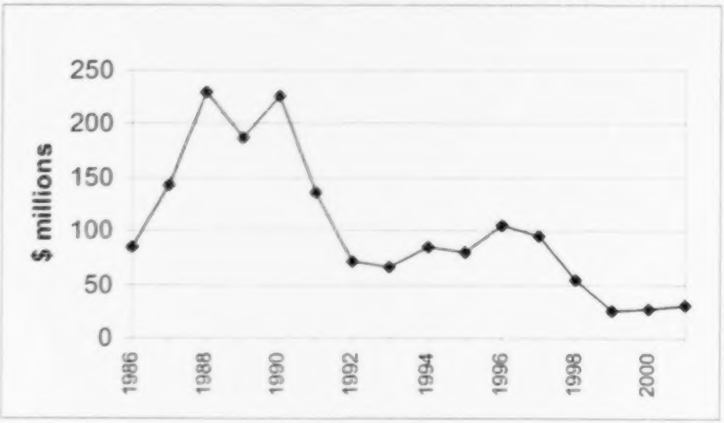
In 2001, the B.C. Ministry of Energy and Mines (MEM) reports that exploration expenditures in the region were $7.8 million, which represents 25% of the total for B.C.

The region's share of B.C.'s expenditures has been unusually high in the last 4 years with coal exploration taking a larger share of total exploration expenditures in B.C.

Coal exploration expenditures in 2001 have increased 2.5 times over the 2000 level, while exploration for other metals and minerals are a third of what they were in 1998.

The exploration spending pattern in the Kootenays reflects the pattern for the province overall. In the last 15 years, exploration expenditures in B.C. were at their highest between 1988 and 1990. Spending declined dramatically through 1991 and 1992, recovered somewhat to 1996, and then declined again to a low of approximately $25 million in 1999. Exploration increased slightly in 2000 and 2001 to the estimated 2001 level of $31 million (preliminary data). MEM estimates that provincial exploration expenditures of $150 million to $200 million per year are required to sustain the discovery of new mines.

Figure 7: B.C. Mineral Exploration Expenditures



Source: B.C. Ministry of Energy and Mines

During the last decade, many Canadian provinces suffered a significant drop in exploration expenditures, including Quebec and Ontario, which with B.C. were traditionally the targets of most of the mineral exploration effort in Canada. Canada's mining exploration effort dropped by half between the late 1980s and 1999/2000 with some of the drop in expenditures in B.C., Quebec and Ontario being offset by increases in exploration effort in the Northwest Territories, Nunavut and Newfoundland.

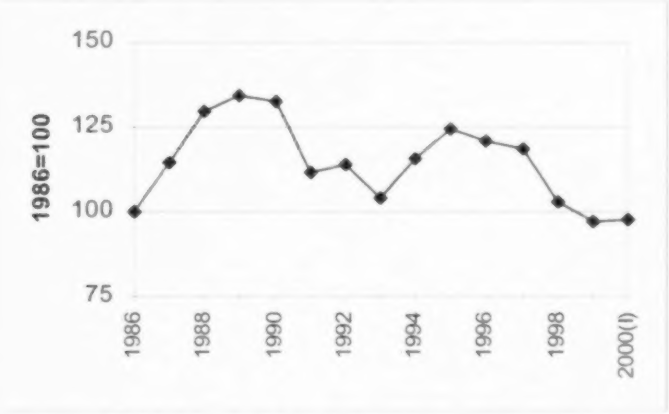
Some of the factors that have affected mineral exploration in B.C. and the Kootenays in recent years include:

- **Mineral commodity prices and US/Canada exchange rates**. These are probably the two most important factors affecting the industry. MEM has prepared an index of mineral prices for B.C. that includes copper, lead, zinc, gold, silver and metallurgical coal prices. The mineral price index does not take into account general inflation (i.e. prices are in nominal terms).

As shown on the chart opposite, B.C.'s mineral price index for 1999 and 2000 dropped slightly below what it was in 1986, even in nominal dollar terms.

The B.C. Mineral Price Index is based on prices in Canadian dollars. In recent years, the low Canadian dollar relative to the U.S. currency has assisted Canadian mining companies in remaining competitive. However, since so many other mineral producing countries have also seen their currency depreciate relative to the U.S. dollar, the low Canadian dollar has not helped the B.C. mining industry as much as it has the forest industry, for example.

Figure 8: B.C. Mineral Price Index (1986=100)



Source: B.C. Ministry of Energy and Mines

- **Land Use Conflicts**. Mining industry officials in B.C. often refer to some key landmark decisions that have, in their view, affected the state of exploration in B.C. These include the Windy Craggy/ Tatshenshini Protected Area and the Tulsequah Chief mine. While these decisions are in Northern B.C., investors claimed that they created a climate of land use uncertainty in B.C., which affected exploration expenditures throughout B.C. Also, in 1998, Treasury Board approved $5 million to fund the negotiated settlement of all mineral titles affected by PAs. By the end of 2000, MEM had reached settlement of approximately 55 mineral titles. Approximately 300 mineral titles have been expropriated and MEM is currently negotiating with many more titleholders.[16] Some of the more significant PAs created in or near the Resource Evaluation Area include the Akamina-Kishinena, Height of the Rockies and Elk Lakes.

While land use conflicts may have affected mineral exploration in B.C., it is important to note, however, that the largest decline in expenditures occurred in 1991 and 1992, before the results of the SLUPs and before the establishment of the Alsek-Tashenshini Protected Area.

---

[16] Ministry of Energy and Mines, e-mail dated December 22, 2000.

- **Key Legislation**. There has been recent legislation and regulations aimed at clarifying guidelines for conducting exploration and obtaining permits to develop mines outside Protected Areas. These include the Mineral Exploration Code (MEC) and Bill 12, the Mining Rights Amendment Act. The mining industry had been hoping to strengthen the language of Bill 12 to make it clearer that SMZs do not constitute an additional set of more stringent environmental regulations on the industry and in May 2002, the B.C. Government announced changes to the Mineral Tenure Act that defines lands as either open or closed to mining (referred to as a Two-Zone system). Other changes to the Mineral Tenure Act and the Mines Act were also announced to help streamline the permitting process and encourage mineral exploration.

- **Other Factors and Government Policies**. The primary factors (mineral prices and exchange rates) driving the decline in exploration expenditures in the 1990s were not unique to B.C., although B.C. does appear to have suffered a slightly steeper decline than either Ontario or Quebec. Other factors that may have impacted B.C. exploration expenditures may include First Nations' claims, environmental regulations, tax policies, investment climate, labour and other costs, and other government policies. The legislation changes announced in May 2002 may help reduce the exploration expenditure gap between B.C. and other provinces.

Coal Mining Exploration in the East Kootenays

MEM reports that the 2001 exploration expenditures for coal were directed to drilling at, or in the vicinity of, the five producing coal mines in the Elk Valley. The increase in coal exploration activity in 2000 and 2001 reflects the more robust market for the high quality metallurgical coal produced in southeastern B.C. and increased levels of production at the mines in the Elk Valley.

Coal exploration expenditures in the last four years have taken place at or near the five existing coal mines. Fording has also carried out some exploration just north of the Coal Mountain mine.

Some coal exploration has occurred over the last 20 years in and near the Plan Area but outside the existing mine sites. This includes the Sage Creek Coal proposal, which has been dormant since the 1980s; the Flathead Townsite area, and the Lodgepole property, also currently inactive.

The B.C. Ministry of Energy and Mines has developed extensive geological maps of B.C. using a Gegraphic Information System (GIS) that shows mineral occurrences, mineral tenures and mineral capability for all of B.C. GIS data on known coal resources in the Resource Evaluation Area (Appendix 5) indicate the following:

- There are 24 documented coal occurrences in the Resource Evaluation Area including 5 producing mines, 4 past producing deposits, 2 developed prospects (occurrences with defined grades and tonnages), 1 prospect (occurrence with some indication of dimension) and 12 anomalies/showings (occurrences that are not sufficiently defined to permit resource estimations).

- Coal tenures cover 7% of the total Resource Evaluation Area (2% of the private land area and 8% of the crown and other lands).

A Provincial report prepared in 2001 for the Ministry of Sustainable Resource Management showed that total coal tenures in the province added to 177,808 hectares, of which 50,131 hectares (28%) were in the Kootenay-Boundary region.[17] The 2001 data also showed that for the Kootenay-Boundary region, 78% of the coal tenures were in Enhanced Resource Development Zones, 17% were in general zones and 5% were on agriculture/settlement/private lands. The GIS data for the Resource Evaluation Area in Appendix 5 show a slightly greater area covered by coal tenures than was reported for the entire Kootenay-Boundary region in 2001 (51,963 hectares vs. 50,131 hectares).

Exploration for Metal and Industrial Deposits in the East Kootenays

Metal and Industrial Minerals Exploration Projects in the Plan Area

- **The Howell and Crowsnest properties, southeast of Fernie**. This project, which is located in the Howell Creek area, represents the most significant current mineral exploration in the Plan Area, and is. A total of $450,000 was spent on exploration on the Crowsnest property in 1999. Work for 2002 involves drilling on both properties, in an attempt to identify an economic gold deposit. Evidence to date suggests that the geology is favourable, and good grades have been identified in both drill samples and boulders.[18]
- **Ice diamond project northwest of Elkford**. Several occurrences of kimberlite, the typical host rock for diamonds, have been discovered in the Crossing Creek area. Approximately $1.7million has been spent on exploration in the past 7 years, and diamonds have been recovered from surface samples of three of the kimberlite bodies. In 2001, Skeena Resources Limited carried out a drill sampling program, with negative results.[19]
- **Other Prospects Currently Inactive**. There are other prospects in the Plan Area that have been identified in the past but have no active exploration drilling programs at the present time. These include gold and copper prospects east of the Flathead River. The area also has known phosphate-rock occurrences and abundant limestone.[20]

The GIS data on known mineral resources in the Resource Evaluation Area (Appendix 5) show the following:

---

[17] Pierce Lefebvre Consulting et al., *Socio-Economic Impact Assessment of the Provincial Government's Strategic Land Use Plans on Key Sectors in British Columbia – Final Report*, B.C. Ministry of Sustainable Resource Management, 2001.

[18] From Eastfield Resources Ltd. Web site, www.eastfieldgroup.com/eastfield/crowsnest.html

[19] From Skeena Resources Limited News Release, March 22, 2002

[20] Based on discussions with industry and government representatives.

- There are 27 known mineral occurrences reported for the Resource Evaluation Area, of which 2 are shown as producing mineral deposits[21], 1 is a developed prospect and 24 are prospects.
- Mineral tenures cover 7% of the Resource Evaluation Area: 3% of the private lands and 8% of the crown and other lands.

The GIS data also show estimated mineral potential by ranking tracts in the Resource Evaluation Area from low to high using a provincial ranking hierarchy comprised of 794 ranks grouped into 10 categories.

Table 8: Mineral Potential for the Resource Evaluation Area

% Area by Rank	Metals	Industrial Minerals
0 (No values)	33%	18%
1 (Rank 1-88)	0%	0%
2 (Rank 89-177)	3%	0%
3 (Rank 178-266)	0%	0%
4 (Rank 267-355)	28%	0%
5 (Rank 356-445)	2%	3%
6 (Rank 446-534)	9%	13%
7 (Rank 535-623)	25%	47%
8 (Rank 624-712)	0%	8%
9 (713-794)	0%	11%
Sub-Total	100%	100%

Source: B.C. Ministry of Energy and Mines data reported by MSRM.

Total exploration expenditure data for the Plan Area are not readily available, but data from the MEM Assessment Report Index (ARIS) database show that between 1970 and 2001, an average of 11% of registered East Kootenay mineral exploration expenditures have been expended in the Plan Area. The percentage varies significantly from year to year, ranging between 41% in 1976 and 1% in 1991/1992. Appendix 6 shows the ARIS data for the East Kootenay and the Plan Area from 1970 to 2001.

Economic Impacts of Mineral Exploration and Mining

The Ministry of Energy and Mines reports that there are 2,563 employees in coal mining in the East Kootenays for 2001 (this is 10% higher than the 2,338 employees reported for

---

[21] The project team could not identify the two producing mineral deposits shown by the GIS data and they may be past producers or data anomalies.

2000, which is slightly higher than the Price Waterhouse Coopers estimate for 2000 reported earlier). In addition, there was an estimated 50 PYs of exploration employment in the East Kootenays for 2001, estimated as follows:

- BC Stats estimates that every $1 million in exploration expenditures (in constant 2000 $) generates 9.6 PYs of direct employment and another 5 PYs of indirect employment as a result of purchases of goods and services required for exploration.[22] By comparison, MEM estimates that in 2000, the mineral exploration sector generated some 744 PYs of employment. Based on the $27 million in B.C. expenditures for 2000, this represents 27.5 PYs per million dollars of exploration expenditures. However, a significant portion of the PYs of employment in the B.C. exploration sector may reflect exploration expenditures outside B.C., as Vancouver is a major financial and technical centre for global mineral exploration and mining.

- Applying the lower multiplier of 9.6 PYs per $ million dollar of exploration expenditures to the estimated $7.8 million spent in the Kootenay region suggests that the mineral exploration sector generates some 75 PYs of direct employment. Of this, 62% (or 46.5 PYs) would relate to coal mine site exploration in the Resource Evaluation Area, while the remaining mineral exploration would be scattered throughout the Kootenays, both East and West. In all, an estimated 50 PYs might be generated in the Resource Evaluation Area.

The following table (Table 9) summarizes the economic impacts associated with mining in the Resource Evaluation Area. Additional details may be found in Appendix 4.

Table 9: Summary Economic Impacts from Mining and Exploration in the Resource Evaluation Area

	Estimated B.C. Impacts from Mining and Exploration in the Resource Evaluation Area
Employment (direct, indirect and induced PYs in B.C.)	6,009 PYs
Employment Income (direct, indirect and induced impacts in B.C.)	$288 million
Government Revenues (includes provincial and municipal taxes, and employee income taxes)	$64.7 million

Source: Appendix 4 provides more detail.

---

[22] Based on a survey undertaken by Maki and Sunderman for BC Stats; as reported in *Socio-Economic & Environmental Assessment of the Mackenzie Draft Recommended LRMP*, 2000.

4.1.2. Anticipated Trends

Industry Trends

Coal Sector

The worldwide demand for coal is expected to increase in the long term, as developing countries consume increasing amounts of energy and steel. The rate of increase in demand is expected to be slower than the general rate of worldwide economic growth might suggest, as air quality and greenhouse gas emission concerns trigger substitution away from coal in both energy production and manufacturing processes.

Most of the coal currently produced from the East Kootenay coal fields is metallurgical (coking) coal used in the steel making process. Technological developments in the production of steel, including 'mini mills' which use scrap steel and electric arc furnaces rather than coking coal, and the use of pulverized non-coking coal injection in more efficient blast furnaces, are leading to declines in metallurgical coal imports in industrialized countries. This is expected be offset by increases in imports of coking coal in developing countries such as South Korea, Taiwan, India, Brazil and Mexico.

The demand for thermal coal (which has shown a declining share of total East Kootenay production to 4.4% in 2001) [23] is expected to grow more rapidly, as the demand for energy increases worldwide.

Aside from local and regional concerns in consuming countries regarding the environmental impacts of burning coal, the Kyoto Protocol Agreement on long term greenhouse gas emissions has the potential to significantly alter the worldwide demand for coal. The burning of coal has been identified as a contributor to greenhouse gas emissions, and substitution to other fuels could assist in achieving worldwide emission targets. Development and widespread adoption of better combustion technologies, and cleaner burning coal grades, could also prove to be effective in limiting greenhouse gas emissions.

Mineral and Metal Sector

As noted earlier, mineral commodity prices and the U.S./Canada exchange rates are probably the two most important factors affecting the mineral and metal sector, particularly at the exploration stage. In U.S. dollars, mineral commodity prices have generally declined throughout the 20th century as a result of expanding supply, global competition, and reductions in the costs of production. The B.C. Mineral Price Index in 2000 was approximately 25% (in nominal terms) lower than in the late 1980s, which partly explains the relatively low levels of exploration expenditures throughout the 1990s, particularly when coal exploration is excluded.

---

[23] Source: B.C. Ministry of Energy and Mines, *B.C. Coal Production, 1988-2001.*

In the short term, the relatively slow economic growth in the North American economy in 2002 is unlikely to push commodity prices upwards. Most industry analysts in the Spring 2002 believe that there will be some strengthening in mineral commodity prices in 2002 and 2003, but no spectacular surges that would see major increases in activity. Gold is unlike other commodities, however, and its role as a hedge against inflation and adversity may result in some upward pressure on gold prices in the years to come, as has been experienced over the past several months.

In B.C., changes in government policies and rising gold prices have led to renewed optimism in the mineral exploration sector, which could spark some increase in mineral exploration activity.

Land Use Planning Issues

Coal Sector

The coal resources and reserves supporting the currently operating coal mines are located under private/agricultural/settlement lands (5%), Crown lands designated as general zones by the KBLUP (17%), or Crown lands designated Enhanced Resource Development Zones (ERDZs) for coal by the KBLUP (78%).[24]

The open pit coal mining operations and associated processing facilities have a very substantial impact on the land they disturb. As mine development moves from one portion of a mine-site to the next, previously mined areas are reclaimed and returned to a more productive state for the sponsorship of other values. Coal mining activities of the five producing mines have disturbed 10,191 hectares of land (private and public), of which 2,041 hectares have been reclaimed.[25]

With respect to coal mining activities on Crown lands in the Cranbrook TSA, the province's Chief Forester noted "It is expected that most coal mining areas within the timber harvesting land base will be rehabilitated back to some level of forest productivity, although some areas may be converted to lower productivity levels or open range".[26]

The Line Creek and Fording River mines operate on crown lands in ERDZs with Greenhills and Elkview operating on private lands. Coal Mountain operates primarily on private land, but has some processing infrastructure on crown lands in an ERDZ. The ERDZ designated lands comprise an estimated 5.2% of the Resource Evaluation Area (based on the 2001 data) and are managed under integrated resource management guidelines with an emphasis on coal mining and exploration.

---

[24] Source: Pierce Lefebvre Consulting et al., *Socio-Economic Impact Assessment of the Provincial Government's Strategic Land Use Plans on Key Sectors in British Columbia – Final Report*, B.C. Ministry of Sustainable Resource Management, 2001, Appendix 4-10.

[25] Source: John Errington, BC Ministry of Energy and Mines, Victoria. Area disturbed is a total figure since mine startup to the end of 2000, as is area reclaimed. Reclaimed is defined as vegetation being established for at least one year.

[26] Larry Pedersen, *Rationale for Allowable Annual Cut Determination*, B.C. Ministry of Forests, December 2000, pg.41.

Metals and Minerals Sector

The long term value of subsurface metals and minerals is extremely difficult to gauge, given that their extent can not be determined with any certainty, and their final value in commodity markets is very cyclical. The mining community province-wide has expressed concern that the subsurface metals and minerals resource potential may be compromised through access restriction and land area exclusion policies that cannot take into account the unknown value of the resources beneath.

The metals and minerals sector seeks assured access to crown lands outside of protected areas for exploration, and some comfort that discovered deposits can be developed when found. Land use management for recreation, fish and wildlife values that restricts or diminishes road access, generally conflicts with the interests of metals and minerals exploration.

Energy Sector

Oil and Gas

The Resource Evaluation Area overlies a substantial portion of the Fernie Sedimentary Basin, which contains significant oil and gas resources. The Geological Survey of Canada estimates that the Fernie Basin contains 88 million barrels of oil, 400 billion cubic feet of natural gas, and 33 trillion cubic feet of coalbed methane.[27]

Of the Kootenay region's oil and gas resource potential, the provincially significant coalbed methane potential of the Fernie basin is currently receiving the most attention. EnCana (formerly AEC Oil & Gas) is conducting a coalbed methane recovery pilot project in the Elk Valley near the Fording River coal mine, and has petroleum and natural gas rights to 44,000 hectares in the Upper Elk Valley. Pending the success of this pilot, and the future price levels of natural gas, the East Kootenay region may become among the first in B.C. to produce commercial quantities of coalbed methane (EnCana has recently commenced commercial production from six coal bed methane wells in the Palliser area in Alberta.) The close proximity of the Trans Canada natural gas pipeline provides a relatively easy tie-in opportunity for coalbed gas produced in the Elk Valley area, compared to other areas of B.C.

EnCana currently employs 15 to 20 full time equivalents (FTEs) on the project, and expects 300 construction jobs and 30 full time ongoing jobs to result if full production development proceeds.[28]

The East Kootenay region has the longest history of petroleum exploration in the province, and almost all of it has been in the Resource Evaluation Area. Oil and gas exploration that has occurred in the Plan Area in the past includes several wells drilled by various operators in the Flathead area, which were ultimately abandoned. The area is viewed as having high oil and gas potential that has not been fully explored (it has been observed that lack of production does not necessarily indicate lack of potential[29]).

---

[27] www.em.gov.bc.ca/Oil&gas/initiatives/Graphics/BCSedBasPipMap1.jpg

[28] Allan Greeves, EnCana, personal communication.

GIS data supplied by MSRM (Appendix 5) indicate 60,643 hectares of the Resource Evaluation Area are under petroleum and natural gas tenure or 8% of the Resource Evaluation Area. This includes 39,776 hectares under drilling license, 4,648 hectares under Class B permit, and 16,219 hectares under petroleum and natural gas leases. Areas with coal bed methane potential cover approximately 9% of the Resource Evaluation Area, including 25% of the private lands and 5% of the Crown and other lands.

Electricity Production

B.C. Hydro operates two hydroelectric generating stations in or near the Resource Evaluation Area. The Aberfeldie Dam is located on the Bull River about 35 kilometres southeast of Cranbrook. This 32 metre-high concrete dam, originally constructed in 1954, was recently upgraded (Dec. 1999) to provide additional support to withstand full silt loading and earthquake loads. The Elko Dam and Powerhouse are situated in the Elk River Canyon, 55 kilometres southeast of Cranbrook. Originally constructed in 1924, this facility supplies 86,000 megawatt hours of energy annually to customers in the region. Both of these facilities and related water systems are scheduled for upcoming Water Use Plans sponsored by B.C. Hydro.

Fording Coal has developed plans for a 150 megawatt, coal-fired power plant near the Fording River mine site using predominantly reject coals from mining and processing activities. This power plant would serve the needs of Fording's mining operations, as well as provide power for sale on the power distribution grid.

4.2. FORESTRY

The Southern Rocky Mountain Management Plan Area (Plan Area) and the associated Resource Evaluation Area form a significant part of the Cranbrook Forest District (CFD). The CFD includes communities in the Resource Evaluation Area such as Elkford, Sparwood and Fernie, as well as the somewhat larger communities of Kimberley and Cranbrook to the west of the Resource Evaluation Area. Since from a forestry perspective, the Plan Area and Resource Evaluation Area are part of a larger management unit (i.e. the CFD/TSA), data are presented at the CFD level and then the Resource Evaluation Area implications are discussed.

This section is based on the following information sources:

- Various socio-economic studies and multiple-account analyses conducted for or by the Ministry of Forests (MOF) as part of the Timber Supply Review (TSR) process. These are listed as part of the bibliography at the end of the Base Case report.
- Data collected from the MOF on Timber Harvesting Land Base and volumes billed.

---

[29] Patrick Monahan, Presentation to Subsurface Resources Workshop, Feb. 2002

- Discussions with industry and government to help update some of the information presented in reports prepared as part of TSR-1 and TSR-2 and to help gain an understanding of the various issues facing the forest sector in the Plan Area.
- The Kootenay/Boundary Land-Use Plan and Implementation Strategy.

4.2.1. Current Activity and Historical Trends

Land Area and THLB

The Plan Area and the Resource Evaluation Area comprise approximately 30% and 51% respectively of the land area and 19% and 28% respectively of the THLB[30] in the Cranbrook FD.

Table 10: Area and THLB for the Cranbrook Forest District and the Plan Area

	Total Area (ha) and % of Cranbrook FD	Timber Harvesting Land Base (THLB)[c]		Area not owned or administered by Province[b]	
		Hectares	% of Area	Hectares	% of Area
Cranbrook Fd[a]	1,483,083 ha	407,058	27%	228,764	15%
Resource Evaluation Area (% of Cranbrook FD)	754,463 ha (51%)	114,593 (28%)	15%	149,679 (65%)	20%
Plan Area (% of Cranbrook FD)	440,614 ha (30%)	78,179 (19%)	18%	68,386 (30%)	16%

(a) The total area for the Cranbrook FD includes the Purcell Wilderness Conservancy and various provincial parks.

(b) The area not administered by the Province of B.C. includes private land and areas under federal jurisdiction.

(c) The THLB for the Cranbrook FD excludes all current and contemplated future reductions to the productive forest.

Sources:

Cranbrook Forest District PCRS Reports by Landscape Unit.

B.C. Ministry of Forests, *Timber Supply Review Cranbrook Timber Supply Area Analysis Report*, 1999.

Lodgepole pine accounts for about 60% of the commercially harvested timber in the Cranbrook FD, with spruce, balsam, fir and larch comprising another 35% of the total. The profile of the harvestable timber in the Plan Area is similar to the district wide profile. In the Cranbrook FD 71% of the forest stands on the timber harvesting land base are younger than the minimum harvestable age[31]. Similarly, approximately 75% of the stands on the THLB in both the Resource Evaluation Area and the Plan Area are classified as immature[32]. While these data are not directly comparable, due to major differences in the criteria being measured, they do indicate a similar predominance of immature timber.

---

[30] The proportions of the THLB are calculated using the THLB definitions and designations in the Timber Supply Review for the Cranbrook TSA, Ministry of Forests, 1999.

[31] B.C. Ministry of Forests, *Timber Supply Review, Cranbrook Timber Supply Area Analysis Report*, 1999, page 14.

[32] GIS data supplied by the Ministry of Sustainable Resource Management (MSRM) for this planning process (Appendix 3).

AAC for the Cranbrook TSA

As of January 1, 2001, the AAC for the Cranbrook Timber Supply Area (TSA) is 871,000 m3, of which 838,000 m3 is from the conventional timber harvesting land base. The balance or 33,000 m3 is to be harvested from areas with problem forest types and from fire-maintained ecosystem restoration areas. The following table summarizes recent changes in the AAC levels for the Cranbrook TSA.

Table 11: Changes to AAC for Cranbrook TSA, 1980 to 2001

Year	AAC Levels	Comments
1981 to 1987	900,000 m^3	
1987	873,810 m^3	Reflects land transfer from Cranbrook TSA to Invermere TSA
1990	1,249,810 m^3	Reflects one year increase of 376,000 m^3 to harvest beetle infested area
1991 and 1992	1,157,810 m^3	Reflects two year increase of 284,000 m^3 each year for beetle area
1993 and 1994	873,810 m^3	
1995	900,947 m^3	Reflects addition of the former Tree Farm License (TFL) 13
1996	850,000 m^3	Reflects 5.6% reduction in AAC following TSR-1
2001	871,000 m^3	Of this, 838,000 m^3 is to be harvested from the timber harvesting land base (excludes 12,118 m^3 per year of woodlot license volume which had previously been included in the AAC for the TSA) and the other 33,000 $m^3$is to be harvested from 380 hectares per year of problem forest types and from 230 hectares per year of fire-maintained ecosystem restoration areas.
Average 1995-2001	860,278 m^3	

Source: Pedersen, Larry (Chief Forester), B.C. Ministry of Forests, *Cranbrook Timber Supply Area, Rationale for Allowable Annual Cut (AAC) Determination*, Effective January 2001.

The conventional AAC remained stable at 873,810 m3 between 1981 and 1995 (after accounting for the 1987 change in AAC boundaries and the incorporation of former TFL13). In 1996, the conventional AAC dropped by 5.6% to its current level, and remained unchanged in the 2001 determination. During the same period, special licenses of up to 376,000 m^3 were issued to harvest beetle infested and problem type forests.

Table 12: AAC Apportionment for the Cranbrook TSA

	AAC (m^3/year)	% of Total AAC
Forest License: Tembec Industries	607,652 m^3	69.8 %
Forest License: Galloway Lumber Company	131,100 m^3	15.0 %
Timber Sale Licenses: MacDonald Ranch and Lumber	5,672 m^3	0.7 %
Small Business Forest Enterprise Program (all categories)	121,458 m^3	13.9 %
Forest Service Reserve	5,118 m^3	0.6 %
Total	871,000 m^3	100 %

Note: Woodlot licenses and their supporting land base have been removed from the TSA for the purposes of AAC determination. In the Cranbrook Forest District woodlot licenses support an annual harvest of 12,118 m^3.

Source: Pedersen, Larry (Chief Forester), B.C. Ministry of Forests. 2001. *Cranbrook Timber Supply Area, Rationale for Allowable Annual Cut (AAC) Determination*, Effective January 2001.

Timber Harvest

Between 1995 and 2001, the billed volumes and stumpage revenues from crown lands for the Cranbrook TSA have averaged approximately 980,000 m3 and $16.2 million respectively (an average of $16.43 per m^3). Billed volumes and the AAC are typically not comparable over short periods of time mainly due to cut control flexibility, which allows licensees to harvest within 50% of their AAC in any given year as long as the harvest level over a 5 year period is within 10% of their AAC. Undercuts or over cuts for a five year period are carried forward and averaged into a license holder's AAC for the following 5 year period.

Other factors that reduce the comparability between billed volumes and AAC include Licenses-to-Cut which occur outside of AAC, and 'Opportunity Wood' which is below AAC utilization standards but which is scaled and billed by the Revenue Branch. Nevertheless, the billed volumes data do seem to indicate that between 1995 and 2001, licensees have harvested approximately 14% more than the AAC of some 860,000 m3. The following table shows billed volumes, values billed and average billed value per m3 for the years 1995 through 2001.

Table 13: Volume and Average Value Billed for the Cranbrook TSA, 1995 to 2001

	Volume Billed (m^3)	**Value Billed (m^3)**	**Average Value Billed $ per m^3**
1995	884,768	$17,329,789	$19.59
1996	1,144,659	$23,509,542	$20.54
1997	870,240	$17,112,198	$19.66
1998	849,998	$7,484,716	$8.81
1999	919,718	$12,859,544	$13.98
2000	1,181,539	$18,896,367	$15.99
2001	999,663	$16,439,591	$16.45
Average 1995 - 2001	978,655	$16,233,107	$16.43

Note: Volume and value billed excludes deciduous, waste and reject categories.
Source: B.C. Ministry of Forests Revenue Branch.

In addition to the timber harvested on crown land, there is significant harvest from private lands in the Cranbrook FD. The Revenue Branch of the Ministry of Forests reports that between 1995 and 2001, an average of 252,000 m3 was harvested each year from private lands and Indian Reserves. Further details are provided in Appendix 1. Substantial portions of these lands are contained in the Resource Evaluation Area (65%) and the Plan Area (30%). Based on these land area proportions, the implied contributions of timber from private and federal lands average 165,000 m3 for the Resource Evaluation Area and 75,000 m3 for the Plan Area per annum (see Appendix 2-2 for more detail).

Prorating the annual private land timber harvest based on the share of private lands in the Resource Evaluation Area and Plan Area is questionable, since more of the private lands in the Resource Evaluation Area are Managed Forest Lands, compared to the Cranbrook Forest District as a whole. Direct estimates by industry participants, however, yield a similar result of about 165,000 m3 per annum for the Resource Evaluation Area.

Major Licensees and Processing Facilities

Timber resources harvested from Crown and private forested lands in the Resource Evaluation Area help support major timber processing operations located outside of the Resource Evaluation Area, including: sawmills at Elko and Galloway, a planer mill and value added plant in Cranbrook, and pulp mills at Skookumchuck and Castlegar. There are two major licensees in the Cranbrook FD, Tembec and Galloway Lumber Company Ltd., as well as several smaller operations harvesting timber under the Small Business Program.

In total, primary processors in the Cranbrook FD process about 1,219,000 m3 of logs per annum. Crown and private lands in the Resource Evaluation Area provide an estimated 34% (410,000 m3) of these logs, including 20% (243,000 m3) from the Plan Area (see Appendix 2-1 and 2-2).

Tembec Industries Inc. (Tembec)

Tembec is the largest wood harvester and processor in the East Kootenay region, and the largest harvest licensee in the Cranbrook FD. Tembec processes wood from the Plan Area at a large sawmill in Elko, a planer mill in Cranbrook, a value added plant in Cranbrook and a pulp mill in Skookumchuck.

Tembec (formerly Crestbrook Forest Industries) rationalized and reorganized its sawmilling capacity in 1998 with the closure of a large sawmill in Cranbrook, and increased utilization of its sawmills in Elko and Canal Flats. The planer mill associated with the closed Cranbrook sawmill continues to operate, providing additional planer capacity for both the Canal Flats and Elko sawmills. A $10.7 million Value Added Centre was opened in September 2000 on the site of the closed sawmill in Cranbrook, but this facility has been idled since November 2001 pending developments in the U.S. softwood lumber trade dispute and improvements in the production processes at the facility.[33]

Tembec has also recently added a $50 million co-generation facility to the Skookumchuck pulp mill which uses bark and wood waste from sawmills in the region to produce electricity, significantly reducing its energy costs at the pulp mill and providing environmental benefits to the region.[34]

Galloway Lumber Company Ltd. (Galloway)

Galloway is an independently owned sawmill operation in Galloway, some 50 km east of Cranbrook. The operation started in 1945 and it amalgamated with Silver Ridge Sawmills approximately 10 years ago.

Galloway has the capacity to produce some 52.8 million board feet of lumber each year and generates some 89 PYs of employment in timber processing (excluding woodlands and logging contractors). Recent upgrades to the Galloway mill include a new planer (1997), a new log barker (2001), and a new cut-off saw (2001).

---

[33] Source: Tembec Inc., Press Release, *Tembec Shuts Down the Cranbrook Value Added Centre*, November 2, 2001.

[34] Source: Tembec Inc., Press Release, *Tembec Announces the Official Opening of its $10.7 Million Cranbrook, B.C. Value Added Centre*, September 26, 2000.

Smaller Processing Facilities

There are a few smaller processing facilities located in the Cranbrook FD. They include:

- Two smaller lumber mills: Bear Lumber in Cranbrook and MacDonald Ranch and Lumber in Grasmere. Together, these two mills have an annual capacity of 12 million board feet of lumber.
- Two pole manufacturers: CFP Enterprises (previously Canada Cedar Pole and then Carney Forest Products) and J.R. Blackmore & Sons (merged with Kootenay Wood Preservers Ltd.).
- Various smaller primary processing facilities including two log home manufacturers, Canalog Wood Industries Ltd. and Grizzly Peak Log Homes Ltd.

Timber Processing Employment

The timber harvest from the Cranbrook FD is primarily processed at sawmills and primary facilities within the Cranbrook FD and the chips produced from the various sawmills are processed at the Tembec pulp mill in Skookumchuck in the Invermere TSA, and at the Celgar facility in Castlegar.

The Plan Area and Resource Evaluation Area boundaries exclude most of the timber processing facilities that depend on timber harvested in the region. For example, Galloway and Elko, the two communities where most of the sawmilling takes place, are just on the outside edge of the Plan Area. Also located outside the Plan Area is the planer mill in Cranbrook, which depends on the Elko sawmill for 52% of its lumber input, and the Skookumchuck pulp mill, which is partly dependent on chips from the Cranbrook FD sawmills. While the pulp mill in Skookumchuck is in the Invermere TSA, most of the workers at the mill reside in the Cranbrook Forest District.

Previous socio-economic studies prepared as part of TSR-1 and TSR-2 have isolated the TSA forest sector impacts from the provincial impacts. Since the Plan Area includes very few communities, the consultants have chosen not to differentiate between the forest sector employment inside the Plan Area or Study Area, and employment in the Cranbrook FD and Skookumchuck area (referred to here as the Cranbrook Region). Employment and government revenue coefficients derived for the region and province are applied to the Plan Area harvest to estimate the economic impacts of the Plan Area harvest.

Manufacturing facilities in the Cranbrook Region currently generate an estimated 922 Person Years (PYs) of employment. This includes:

- 753 PYs of employment at Tembec' s Elko mill, Cranbrook planer, Cranbrook head office and Skookumchuck pulp mill;
- 89 PYs at the Galloway Lumber sawmill; and
- an estimated 80 PYs at other primary timber processing facilities.

Excluded from this estimate are the 37 jobs at the Cranbrook value-added plant

Timber processing employment has dropped since 1993, the year that was reviewed as part of the TSR-1 socio-economic analysis conducted for the Cranbrook TSA. In 1993, the forest industry in the Cranbrook Region generated some 1,126 PYs of employment, compared to the 922 PYs estimated for 2002, a drop of 18%. The major changes are as follows:

- Employment dropped by 13% at Tembec, mainly due to the closure of the Cranbrook sawmill. Even though some additional employment was created at Elko, employment has nevertheless dropped from some 871 PYs in 1993 to 753 PYs in 2002. This excludes the 37 PYs at the value-added plant (when the value-added plant re-opens, the drop in Tembec employment would still be 9% and the overall drop in employment for the region would be 15%).
- Employment estimates for the smaller processing plants dropped from 150 PYs in 1993 to some 80 PYs in 2002, a drop of 47%. The data, however, may not be entirely comparable. It is possible that the 2002 data do not capture the full employment at the smaller processing facilities that operate in the Cranbrook TSA and surrounding region, and as a result, the drop in employment at the smaller operations may not be as significant as is being implied.

Employment Coefficients

Table 14 summarizes the employment coefficients per 1,000 m^3 of timber harvest for the Cranbrook Region. As noted earlier, most of the employment impacts occur within the Cranbrook FD and in Skookumchuck and as a result, the table does not differentiate between the impacts that occur in the Plan Area and those that are in Cranbrook and other nearby communities but fall outside the Plan Area. These coefficients, however, can be used to roughly estimate direct employment impacts of SRMMP timber. The table includes current data as well as data presented in the TSR-1 and TSR-2 socio-economic analyses.

Table 14 shows that the timber harvesting and silviculture coefficients increased overall between 1993 and 1998, from 0.37 in 1993 (0.30 for timber harvesting and 0.07 for silviculture) to 0.41 in 1998 (0.36 for timber harvesting and 0.05 for silviculture). This 11% increase is partly due to the enacting of the Forest Practices Code in 1995. The current coefficients for timber harvesting and silviculture are assumed to have remained at the 1998 level.

Table 14: Employment Coefficients Per 1000 m^3 of Wood Harvested and Processed

Provincial Impacts by Sector	TSR1 - 1993	TSR2 - 1998	April 2002 (excl. Tembec Value-Added Plant)
Direct Employment:			
• Timber Harvesting	0.30	0.36	0.36
• Silviculture	0.07	0.05	0.05
• Wood Processing	0.57	0.42	0.38
• Pulp & Paper Processing	0.14	0.12	0.14
Total Direct Employment	1.08	0.95	0.93
Indirect & Induced:			
• Regional (Cranbrook Region)	0.63	0.43	0.49
• Outside Region, within B.C.	0.80	0.48	0.68
Sub-total Indirect & Induced	1.425	0.91	1.17
Total Direct & Indirect Employment	2.506	1.86	2.10

Source: MOF reports prepared as part of TSR-1 and TSR-2 and discussions with licensees.

Table 14 also shows the indirect and induced employment that may result from timber harvesting.[35]

The table differentiates between the Cranbrook Region and the provincial indirect and induced employment impacts.

The employment coefficients imply that for every 1000 m3 harvested in the Cranbrook Region, some 0.93 PYs of direct employment are created in timber harvesting and processing.

The table also shows that an estimated 2.10 PYs of employment in B.C. result from harvesting each 1000 m3 of wood in the Cranbrook Region. This employment coefficient excludes the Tembec value-added plant. Including the impacts of the value-added plant would increase the overall employment coefficient to 2.20 direct, indirect and induced PYs per 1000 m3. Appendix 2 provides more detail.

Summary of Economic Impacts from Forest Industry

Table 15 summarizes the forest industry in the Cranbrook TSA, the Resource Evaluation Area and the Plan Area. Additional details are presented in Appendix 2. The impact estimates assume that the forest industry in the Cranbrook Region relies on timber harvested from the Plan Area in direct proportion to the share of the Cranbrook TSA timber harvesting land base that is represented in the Plan Area. There are a number of reasons why this may not be the case, at least not in the short and medium term. Some of these are:

---

[35] Indirect employment represents the spin-off effects of related sectors or industries, which supply materials or equipment to an industrial sector, in the case of this report, the forest sector. Induced employment is the result of direct and indirect employees spending their incomes on goods and services.

- The THLB in the Plan Area may have a higher representation of non-timber values which constrain the volume of timber that can be harvested from each hectare of THLB;
- The average volume of timber harvested per hectare in the Plan Area may differ from the average for the entire TSA, due to differences in species, maturity, site productivity, etc.; and
- Short- term harvesting plans may not be evenly distributed across the TSA.

The impact estimates for the Cranbrook TSA shown in Table 15 represent only a portion of the total forest industry impacts in the Cranbrook Region, as these exclude the impacts of the private harvest and other timber processed in the region.

The Resource Evaluation Area represents 28% of the CFD Timber Harvesting Land Base and on that basis would account for an estimated 244,000 m3 of the AAC. Similarly, the Plan Area accounts for 19% of the CFD THLB and on that basis would account for 165,000 m3 of the AAC. This assumes that the timber profile for the CFD mirrors the timber profile for the Study areas.

Table 15: Estimates of Annual Forest Industry Economic Impacts

	Cranbrook TSA	**SRM Study area**	**SRM Plan Area**
THLB	407,058 ha	114,593 ha	78,179 ha
Employment (direct, indirect and induced PYs in B.C.)	1,236 PYs	348 PYs	237 PYs
Employment Income (direct, indirect and induced impacts in B.C.)	$72.1 million	$20.3 million	$13.9 million
Provincial Government Revenues (stumpage and related payments, other forest industry taxes, employee income taxes)	$27.4 million	$7.7 million	$5.3 million

Source: Appendix 2 provides more detail.

Christmas Tree Industry

The East Kootenay region produces between 400,000 and 500,000 Christmas trees annually, which represents a significant portion of the B.C. production. Approximately 25% of this activity occurs on Crown lands, primarily in the East Kootenay Trench. There are between 100 and 115 Christmas tree growers in the East Kootenay area (based on 1996 report), which likely generate between 40 and 50 PYs of employment.[36]

The KBLUP Implementation Strategy notes that there could be negative impacts on Christmas tree production in the East Kootenay Trench, as management for other values encroaches on the Christmas tree production land base (e.g. wildlife winter range, livestock forage, biodiversity and ecosystem restoration opportunities). As is noted in the AAC Rationale for Cranbrook TSA[37], since the 1980s, the area under permit for Christmas trees has been reduced as licenses are not replaced upon expiry. This however, would only impact the 25% of the industry that operates on Crown lands.

---

[36] Source: The number of permits is from *The KBLUP Implementation Strategy*, 1996 (Chapter 7); the job estimate is based on the 1995 number of permits and estimated employment for the Christmas Tree industry in the Cranbrook TSA where approximately 95 Christmas tree growers generated an estimated 35 PYs of employment (Source: Pierce Lefebvre Consulting, Cranbrook TSA Socio-Economic Analysis, 1995).

4.2.2. Anticipated Trends

Long Term AAC

As part of the information generated for the most recent Timber Supply Review (TSR-2) for the Cranbrook Timber Supply Area, an analysis was undertaken of the long-term sustainability of the AAC. A base case was generated which considered several factors not incorporated in the base case for the TSR-1 in 1996, including:

- a more complete factoring in of the provisions of the Forest Practices Code,
- an update of the forest inventory for recent disturbances,
- government approval of the Kootenay-Boundary Land Use Plan (KBLUP), which provides direction for resource management in the region,
- greater recognition of the contribution of inoperable forests to non-timber values and management objectives,
- changes to accounting for recreation values, and
- a re-evaluation of problem forest types.

The base case indicated that the AAC could be maintained for 130 years, followed by a 10% reduction to 754,000 m3 for 50 years, and then a steady long-term harvest level of 883,000 m3.

- This base case did not fully reflect current management in the TSA, or the impending implementation of the Kootenay Boundary Higher Level Plan Order. Key management direction not modeled in the base case, which could have a significant impact on harvest levels includes: Biodiversity Emphasis Options assigned by the Regional Landscape Unit Planning Strategy; and Connectivity Corridors.

A sensitivity projection demonstrating the impacts of implementing the landscape unit Biodiversity Emphasis Options proposed by the KBLUP-IS, shows that the existing AAC can be maintained for 20 years before dropping 7.5% for a period of 80 years and then moving back to the long-term harvest level.[38]

---

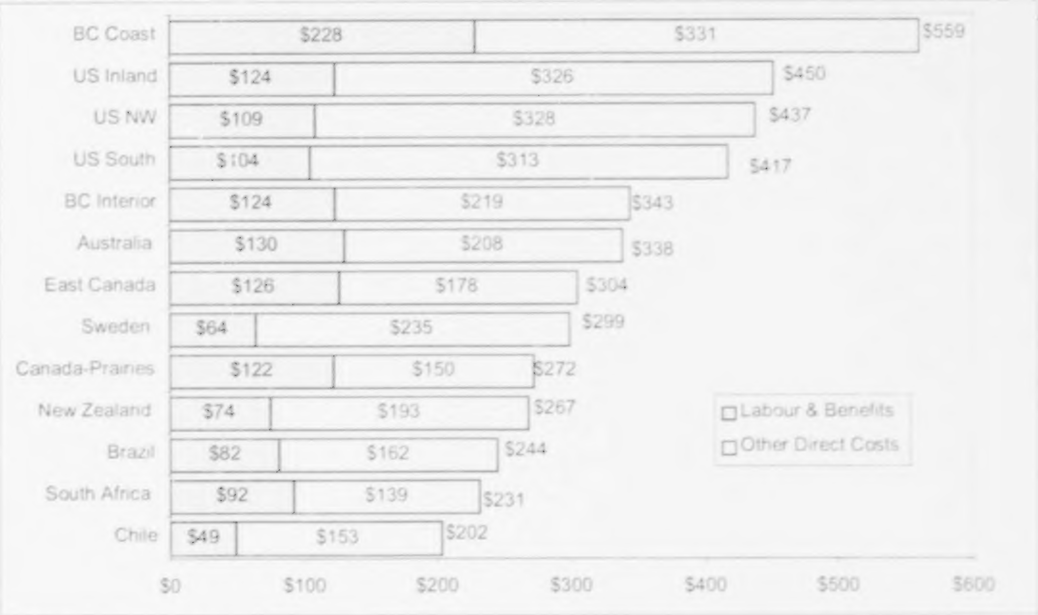
[37] Cranbrook Timber Supply Area, Rationale for Allowable Annual Cut (AAC) Determination; Effective January 1, 2001; Larry Pedersen, Chief Forester, B.C. Ministry of Forests, pg 17.

[38] Source: B.C. Ministry of Forests (Larry Pedersen, Chief Forester), *Cranbrook Timber Supply Area Rationale for Allowable Annual Cut (AAC) Determination*; Effective January 1, 2001, pg 63.

Industry Trends

The B.C. Interior region is one of the more cost competitive regions in North America for producing lumber. A recent report by Dr. Peter Pearse on the Coastal Forest Industry shows the costs of producing lumber by world supply regions. Although the B.C. Interior is more cost competitive at producing lumber than the B.C. Coast and the US, it remains a much higher cost producing region than other provinces and many other regions in the world.

Figure 9: Costs of Producing Lumber by World Supply Regions ($ per mfbm)



Notes: Labour and other direct costs in Canadian dollars per thousand board feet (mfbm) in 2002. Excludes cedar.
Source: Based on PriceWaterhouseCoopers data, as reported in Pearse, Dr. Peter, *Ready for Change*, 2001.

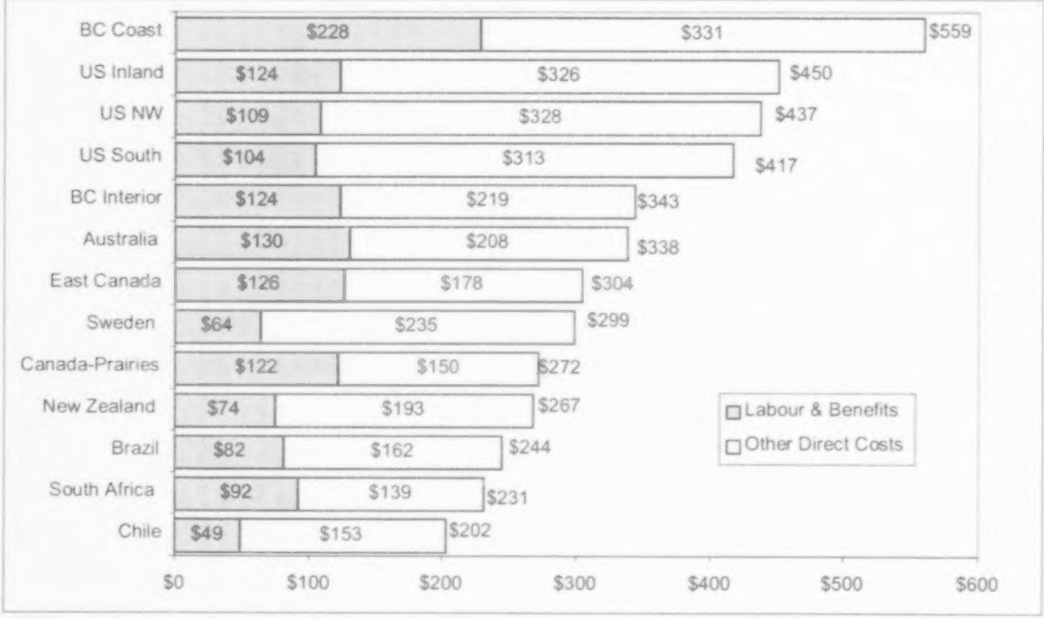
Although not highlighted on the graph, fibre costs account for most of the direct costs of lumber, excluding labour costs.

Logging costs have increased significantly in recent years in B.C. In 1995, the B.C. government enacted the Forest Practices Code (FPC), which prescribed management guidelines for all values of the forest, including timber, fish, wildlife, water quality, biodiversity, soils, recreation and culture. In 1997, PriceWaterhouseCoopers estimated that road costs in B.C. almost tripled between 1992 and 1997 (from $263 million in 1992 to $761 million in 1997) mainly due to the additional roads required to meet the FPC adjacency rules, smaller cut blocks, and higher road building and maintenance standards under the code. Subsequent changes to the FPC may have alleviated some of the cost increases. Also, a recent move towards results based implementation of the FPC is

Industry Trends

The B.C. Interior region is one of the more cost competitive regions in North America for producing lumber. A recent report by Dr. Peter Pearse on the Coastal Forest Industry shows the costs of producing lumber by world supply regions. Although the B.C. Interior is more cost competitive at producing lumber than the B.C. Coast and the US, it remains a much higher cost producing region than other provinces and many other regions in the world.

Figure 9: Costs of Producing Lumber by World Supply Regions ($ per mfbm)



Notes: Labour and other direct costs in Canadian dollars per thousand board feet (mfbm) in 2002. Excludes cedar.
Source: Based on PriceWaterhouseCoopers data, as reported in Pearse, Dr. Peter, *Ready for Change*, 2001.

Although not highlighted on the graph, fibre costs account for most of the direct costs of lumber, excluding labour costs.

Logging costs have increased significantly in recent years in B.C. In 1995, the B.C. government enacted the Forest Practices Code (FPC), which prescribed management guidelines for all values of the forest, including timber, fish, wildlife, water quality, biodiversity, soils, recreation and culture. In 1997, PriceWaterhouseCoopers estimated that road costs in B.C. almost tripled between 1992 and 1997 (from $263 million in 1992 to $761 million in 1997) mainly due to the additional roads required to meet the FPC adjacency rules, smaller cut blocks, and higher road building and maintenance standards under the code. Subsequent changes to the FPC may have alleviated some of the cost increases. Also, a recent move towards results based implementation of the FPC is anticipated by industry to streamline the regulatory burden created by the FPC. Any increase in logging costs ultimately affects the cost competitiveness of the mills in international markets.

Higher stumpage rates have contributed to the higher fibre costs. For example, for the Cranbrook TSA, average stumpage rates for all crown harvest has averaged $16.01 per m3 between 1995 and 2001, compared to approximately $6 per m3 in the early 1990s. (Appendix 1 provides more detail on average billing values per m3).

Trade Disputes with the U.S. and Changes in Government Policy

In March 2002, the United States Department of Commerce announced that it would impose countervailing and anti-dumping duties totalling 29.01% (on average) on imports of Canadian softwood lumber (Tembec was one of six companies independently assessed, and it faces countervail and anti-dumping duties totalling 31.38%). As this report is being written, it is unclear how or if the dispute will be resolved. What does appear likely however is that the next few years will see significant government policy changes with respect to the B.C. Interior forest industry.

Potential forest policy changes raised as part of the Canada-U.S. Softwood Lumber Trade discussions have suggested broad changes to B.C.'s crown forest management including:

- Timber Sale Licenses presently awarded to the Small Business Forest Enterprise Program (SBFEP) could be awarded only on the basis of price (under the current system approximately half of the 13% sold under the SBFEP takes other factors such as employment and value-added investment into consideration).
- Forest Licenses and Tree Farm Licenses could be made freely transferable (the current Forest Act requires the payment of a "transfer tax" equal to a 5% volume reduction, which may be reinstated under certain conditions, such as undertakings to maintain or increase employment).
- The Forest Act could be amended to eliminate the annual cut-control requirements (under the Forest Act, harvesting on crown lands may vary around the Allowable Annual Cut (AAC) by plus or minus 50% each year as long as the harvest is within plus or minus 10% of the AAC over a 5 year period).
- The Forest Act could be amended to remove appurtenancy and timber processing requirements that direct a tenure holder to process timber at a specific mill or facility. Also, other restrictions that might impede temporary or permanent mill closure could also be eliminated.

Implementation of the Kootenay Boundary Land Use Plan

Most of the potential timber harvesting land base and timber harvest volume impacts of the KBLUP-IS have already been factored into the Timber Supply Review and the most recent AAC determination for the Cranbrook TSA. As discussed earlier, this included the impacts of newly designed protected areas and several other factors which may constrain timber harvesting activities. Connectivity corridors suggested by the KBLUP-

IS were not modeled in the Timber Supply Review, while biodiversity emphasis options were given consideration before the final AAC determination.

Issues to be addressed in the SRMMP, which may have implications for timber harvesting (primarily in terms of harvesting costs and the ability to economically harvest the AAC, rather than outright alterations to short term harvesting rates or the harvesting land base) include:

- Access management provisions,
- Biodiversity emphasis implementation,
- Wildlife habitat and species maintenance including altered ungulate winter range management and realigned connectivity corridors,
- Old growth forests,
- Management of riparian ecosystems,
- Visual landscape management,
- Community and domestic watershed provisions, and
- Private land stewardship.

At the time of writing a complete comparative analysis of the attributes of the timber harvesting land base in the Study Area and the TSA was not available. However, some initial data (see Appendix 3) allows the following observation.

The timber harvesting land base in the Study Area contains higher proportions of several managed non-timber values, than the timber harvesting land base for the entire Cranbrook TSA. Some key values with higher incidence on the THLB in the Study Area include high and medium biodiversity emphasis, connectivity corridors and ungulate winter range. For each of these managed values, the Timber Supply Review base case did not completely reflect management direction provided by the KBLUP. To the extent that management practice ultimately deviates from that modeled in the TSR base case, and/or the SRMMP alters management for these values, there may be impacts on timber harvesting that are not contemplated in the most recent Timber Supply Review.

4.3. TOURISM AND RECREATION

Tourism is defined here as employment and income generated by the spending of visitors to the study region on such activities as accommodation and food, recreation activities and transportation. Recreation is defined as outdoor activities enjoyed by residents of the Plan Area. Although local recreationists and tourists are often undertaking the same activities in similar locations, it is typically assumed that spending by local recreationists does not generate net regional employment and income. This is based on the premise that without local recreation opportunities, residents would simply divert expenditures to other locally produced goods and services. This is likely a conservative assumption, given the availability of high quality recreation opportunities just outside the Plan Area. It should be noted that much of the data presented below includes both tourism and recreation use as defined above.

4.3.1. Current Activity and Historical Trends

The East Kootenays in general, and the Plan Area in particular, are internationally renowned for their abundance and diversity of fish and wildlife, pristine wilderness settings and scenic viewscapes. With an annual snowfall of about 10 metres, the main tourist attraction to the area has been the array of opportunities for winter recreation, such as alpine and cross-country skiing and snowmobiling. However, the proximity of rivers and lakes, provincial and national parks, and additional attractions such as golf courses, are extending the tourist season and diversifying the markets for a growing range of food, accommodation and other commercial amenities. The area is also becoming increasingly popular for recreation property owners.

As shown in section 3 above, tourism is the second most important private sector contributor to the Resource Evaluation Area's economic base. Direct tourism employment in the Resource Evaluation Area in 1996 is estimated at about 660, accounting for about 15% of Resource Evaluation Area basic employment and 5% of basic income in 1996.[39] However, more recent data indicate that tourism employment has grown significantly since 1996, perhaps by more than 50%, due primarily to the Fernie Alpine Resort. As noted above these estimates do not include non-resident employment which relies in part on the tourism attractions of the Resource Evaluation Area. Based on 1996 data, about 69% of estimated tourism employment is in Fernie and 31% in Sparwood. Elkford has virtually no tourism employment and income in 1996, (see Table 3)[40] but more recent data indicate some activity.

Historical growth in tourism within the Resource Evaluation Area has been strong, despite declines in the total labour force. For example, the total labour force in the accommodation and food sector, which is highly correlated with commercial, front-country tourism, has grown about 48% over the 1981-96 period. This represents an average growth rate of over 2.6%/yr, despite declines in overall labour force over this period. Most of the growth in food and accommodation labour force has occurred in Fernie, but other communities in the Resource Evaluation Area are also experiencing increases. Anecdotal evidence also suggests a growing number of commercial backcountry and non-resident recreation activities in the Resource Evaluation Area, particularly in recent years.[41]

There are a number of components to the tourism industry in the Resource Evaluation Area, including: "front country" commercial facilities (including ski, and hotel / motel / B&B facilities), commercial back country operations (including wilderness lodges and hunting and angling guides) and recreation activities by the visiting public (e.g. snowmobilers and campers from Alberta, the rest of BC and elsewhere). These components are all linked in varying degrees to land use and resource management issues (e.g., wilderness, fish and wildlife and scenic values; motorized and non-motorized access) in the Resource Evaluation Area. A portion of the tourism activity in the Resource Evaluation Area is also related to factors such as business travel, visits to relatives or through traffic. The visitor profile and various components of the tourism and recreation sector in the Resource Evaluation Area are described in more detail below.

---

[39] Source: BC STATS economic dependency data. This is an estimate of direct employment, whereas estimates in Table 6 shows the sum of direct and indirect employment.

[40] Labour force data for 1996 does indicate labour force of 90 in food and accommodation in Elkford, although much of this could be attributed to the mining and public sectors which account for virtually all of the economic base in this community.

[41] *Recreational Hunting and Fishing and Commercial Hunting, Fishing and Trapping Focus Groups for the SRMMP*, Meeting Minutes, March 27, 2002.

Visitor Characteristics

While current information specific to the Resource Evaluation Area is not readily available, data from Tourism BC's extensive visitor survey undertaken in 1995-96 for the eastern Rockies area[42] provides an indication of the visitor profile for the Resource Evaluation Area. The geographic origin and the primary trip purpose for visitors to the eastern Rockies region is shown in Table 16 below. As Table 16 shows, 85% of visitors to the eastern Rockies were non-residents, and 15% residents of BC. Leisure travel accounted for about 89% of resident and non-resident visitors to the area, and business for about 11%. Regional Canadians and Americans comprised about 73%, "long haul" Canadians and Americans 14%, and overseas travellers from Europe and Asia for about 13% of non-resident visitors to the eastern Rockies.

Overall, the most important reasons for travelling to the eastern Rockies are to visit friends or relatives, participate in outdoor / wilderness activities and general sightseeing, in roughly that order. Participation in outdoor / wilderness activities is the primary trip purpose for a weighted average of about 23% of all visitors (resident and non-resident) to the area. This suggests that at least 23% of total tourism employment in the Resource Evaluation Area, or about 150 direct jobs per year (based on BC STATS economic dependency estimates), is directly related to wilderness / outdoor recreation activities.[43]

Interestingly, the BC Visitor Study indicated that while the eastern Rockies attracted 26% of all non-resident visitors to BC, this area accounted only 6% of non-resident expenditures. This is in part due to the fact that the average length of stay is much lower than for other parts of BC – about 3.6 days compared to the provincial average of 6.9 days.

While the linkage with land and resource management may not be as strong for visitors using front country facilities, these visitors also value the viewscapes and natural attributes of the Plan Area. The visual quality of the landscape can influence the duration and frequency of visits to commercial facilities.[44]

---

[42] *British Columbia Visitor Study: The East BC Rockies Visitor Report*, Tourism British Columbia, 1998. Eastern Rockies is defined roughly as the area with Cranbrook and Kimberley on the west, Golden in the north, and then east to the BC - Alberta border.

[43] These estimates represent weighted average for all overnight visitor origins which account for most visitor spending in the Resource Evaluation Area (i.e., excludes day visitors). The primary trip purpose varies by origin of visitor. It is likely that the overall proportion of wilderness tourism-related economic activity is greater than estimated here since it excludes such activities that are not the primary purpose of the trip.

[44] *Kootenay Boundary Land Use Plan Implementation Strategy*, see Ch. 7 *Evaluation*, Draft, October, 1996.

Table 16: Visitor Profile (%) Southern Rockies, 1995-96

	Non-BC Residents	BC Residents
Visitor Origin (both overnight and day visitors)	85%	15%
Regional Canada / US	73%	n/a
Long Haul Canada / US	14%	n/a
Europe / Asia / Other Overseas	13%	n/a
Main Trip Purpose		
Business	89%	89%
Leisure	11%	11%
Visiting Friends & Relatives	29%	33%
Outdoors/Wilderness Activities	24%	17%
General Sightseeing	23%	12%
All Other	24%	38%

Source: *BC Visitor Study: Report on Visitors to the BC Rockies Tourism Region*, Tourism BC.
Note: Data for overnight visitors unless otherwise specified.

Commercial Facilities

The commercial component of the tourism industry in the Resource Evaluation Area is comprised of a diversity of business types, from an international resort operation to numerous independent, small business operators. There are a number of other commercial tourism and recreation facilities just outside the Plan Area at Elko, Jaffray, Lake Koocanusa, Fort Steele and Cranbrook. A proportion of visitors to these areas, as well as visitors on their way to, or from Alberta or the US, are also travelling through and purchasing goods and services at commercial facilities within the Resource Evaluation Area.

As noted above, growth in accommodation and food facilities in the Resource Evaluation Area has been relatively strong, averaging over 2.6% per year over the 1981-96 period, despite declines in the total labour force in the Resource Evaluation Area over the same period. Food and accommodation services also grew much more quickly than the service sector labour force as a whole, which increased at an annual average of 1.5%/yr. More recent data on annual room revenues for the East Kootenays region (which includes the Resource Evaluation Area) indicates continued strong growth in accommodation revenues of about 55% (or about 11.6% per year) from 1996 to 2000.[45] There has also been an increase in highway traffic on Highway 3 near Fernie and the Crowsnest Pass, and a significant increase in the value of residential and commercial building permits in Fernie over the 1995-2000 period.[46] There are many more "front country" businesses in the retail, transportation and service sectors which depend in part on tourism spending. The employment and income generated by these facilities are captured in the economic dependency estimates above.

---

[45] The growth rate is slightly higher (57%) when the Cranbrook area is excluded from the East Kootenays.

[46] Sources: Traffic count data from the Ministry of Transportation and Highways, summer average daily counts, 1996-2000. Value of residential and commercial building permits for Fernie from BC STATS' *Community Facts*. There was also an increase in Sparwood over this period, but less pronounced.

The bulk of tourism infrastructure, built facilities and amenities are located in Fernie, with its large, international ski facility (Fernie Alpine Resort), on-hill food and accommodation services and an RV facility. Fernie also has a variety of other commercial facilities in town, including: over 20 lodges, motels and hotels; two hostels; a number of B&B's and vacation rentals; 2 private campground / RV parks; and the largest selection of food and beverage services, retail outlets, a complete range of indoor and outdoor recreation facilities and other attractions (golf course, museums, galleries and studios).

Sparwood has a small ski hill, a golf course, a private campground (which recently expanded), and indoor and outdoor recreation facilities, in addition to a number of accommodation, food and beverage establishments. Elkford also has a small ski hill, golf club, municipal campground and 2 motels, one of which was constructed, and the other renovated in 1998, indicating growth in tourism in this community since the 1996 Census.

In recent years, skiing at the Fernie Alpine Resort has been the most significant driving force in the tourism sector in the Resource Evaluation Area. This resort, purchased in 1997 by the Ski Louise Group (who also own the alpine resort at Kimberley), is becoming one of the most popular ski destinations in North America. The economic impact of the resort is evidenced by the fact that 70% of the growth in food and accommodation labour force within the Resource Evaluation Area has occurred in Fernie over the 1981-96 period, which excludes more recent activity and related investments. A preliminary estimate provided by Resort staff indicates a current, peak employment level of roughly 600, significantly higher than in 1997.[47] The Fernie Alpine Resort is attempting to promote summer activities such as hiking, biking and horseback riding in order to increase utilization of existing accommodation and food facilities and diversify its markets.[48] This is a pattern familiar to other destination ski resorts in BC, including Whistler / Blackcomb, and will complement similar efforts by other commercial tourism facilities in the rest of the Resource Evaluation Area.

Guide Outfitting / Other Commercial Backcountry Recreation Operators

As noted above, the Resource Evaluation Area is renowned for its abundance and diversity of wildlife, particularly for large mammals such as grizzly, bighorn sheep, and mountain goat, and the wilderness setting which contributes to a unique and valued hunting and viewing experience. These activities also generate significant economic activity. There are 10 guide-outfitters with territories entirely or partly within the Resource Evaluation Area (and the same number, but a slightly smaller area of territories in the Plan Area). Based on provincial estimates by the Guide-Outfitters Association of BC (GOABC) of the economic impacts of industry for 1996, it is estimated that guide-outfitters operating in the Resource Evaluation Area directly employ about 70 people on a seasonal basis. While the number of guides has not increased since then, the number of clients, revenues and employment in the industry have all grown since 1996, despite a decline in the number of big game animals harvested.[49] An increasing proportion of guide-outfitter clients and revenues are related to non-hunting recreational activities which is broadening the client base and extending the season for the industry.[50]

---

[47] Estimate provided by Sandy Tymchyshyn, Assistant to Area Manager, Fernie Alpine Resort.

[48] Pers. comm., Herb Hess, BC Assets and Lands Corporation.

Out of a total of 18 adventure tourism operators listed on the Fernie Chamber of Commerce Web site, there are 4 licensed adventure operators in the Resource Evaluation Area, and 3 in the Plan Area (most of the 18 operators are unlicensed). The licensed operators, most of whom are based in Fernie, offer a range of wilderness recreation activities including hiking, horseback riding, wildlife viewing, rafting and fishing. Currently, there are no licensed operators in the Flathead or Wigwam areas. Most of these commercial backcountry activities are on Crown lands. There has been a significant increase in angling guide licences issued in the Resource Evaluation Area in recent years. There are apparently over 140 angling guides operating in the Kootenay Region 4 at this time, many of whom are non-resident but are partly operating in the Resource Evaluation Area. This is raising concerns about the sustainability of fish populations, particularly on more heavily fished streams such as the Elk River.[51] Other key fish streams in the Resource Evaluation Area include the Flathead, Bull and Wigwam Rivers.

Public Recreation

There is one provincial campsite (Mt. Fernie – 38 sites) within,Resource Evaluation Area and several (Norbury Lake, Kikomun Creek) just outside the boundaries of the Resource Evaluation Area. Data provided by BC Parks indicate that there was an average of over 12,200 visitors per year to the Mt. Fernie campground over the 1998-2000 period (Most of these visitors are non-residents, i.e., tourists) and a total of 40,000 visitors annually to Norbury and Kikomun Creek Parks.Resource Evaluation Area Total use and capacity utilization in these 3 campgrounds is increasing over time, with utilization at 90% during the week and 100% on weekends during the peak summer season.

There are also several major provincial protected areas (Akimina-Kishinena in the southeast, Height of the Rockies and Elk Lakes to the north, and Top of the World to the northwest) just outside the Plan Area boundary, but within the Resource Evaluation Resource Evaluation Area. Attendance is relatively low in these "wilderness parks" because they are less accessible and facilities provided are minimal, in part to minimize impacts on wildlife. Visitors to the Waterton Lakes National Park have also increased significantly since 1995, although 95% of that use is from the Alberta side of the border.[52] A continuation of growing use in the more accessible parks in or adjacent to the Resource Evaluation Area could lead to capacity constraints within those facilities, especially in the longer term.[53]

---

[49] BC Wildlife Branch, Guide Outfitter Reporting System, *Wildlife Harvest Summary by Species and Region*, for the period 1995-96 to 2000-01.

[50] Estimates for 1996 based on *BC Guide Outfitter Industry*, J. Paul & Associates, 1997 and data provided by Dale Drown, GOABC.

[51] *Commercial and Recreational Hunting and Fishing Focus Groups*, Meeting Minutes, op. cit. More detailed information on guided and recreation angling effort will be provided in a new study on freshwater fisheries in BC by J. Paul, but was not yet available upon completion of this report.

[52] Bill Dolan, Parks Canada.

The *BC Visitor Study* indicated that national and provincial park campgrounds were the single most popular type of accommodation for non-resident visitors to the eastern Rockies, and 25% of these visitors stayed in parks in the Kootenay region. A number of commercial backcountry businesses also operate in parks, indicating the importance of parks to the tourism sector.[54]

There are 23 Ministry of Forests recreation sites providing camping and hiking opportunities throughout the Resource Evaluation Area. Data on usage trends is available but not considered reliable because of the voluntary nature of the data collection. MoF staff indicate that use of these recreation sites and trails has grown over the past decade. Several of these recreation sites are easily accessible to communities in the Elk Valley, but most of the sites are in the backcountry. The sites are all accessed by logging road, and 80% - 90% of the use is by residents of the Resource Evaluation Area.[55] As of March, 2004, MoF will no longer be managing these sites and in the meantime, will be seeking private and community groups to operate them.

A whole range of outdoor recreation activities, undertaken by residents and tourists, such as hiking, wildlife viewing, hunting and angling occur on Crown forest lands. Data on such dispersed recreation use are not readily available, but such use is likely far greater than occurs at recreation sites. Although quantitative data are not readily available, motorized recreation activities appear to be growing strongly, particularly snowmobilers from Alberta.[56]

Scenic Resources

The Plan Area is one of the most scenic areas in BC. As noted above, visual quality is important to visitors using front-country commercial facilities, potentially affecting frequency and duration of visits. The current management objective is to conserve the quality of views from communities, major waterways and major highway corridors (i.e., the Highway 3 corridor from Elko to the Alberta border, and the Highway 43 corridor from Elkford to Sparwood) in the Plan Area. The Kootenay Boundary Land Use Plan Implementation Strategy (KBLUP-IS), identifies these scenic areas and defines visual management guidelines for designing timber harvest, forest management and mineral exploration activity.

---

[53] Pers. comm., Mike Gall, Ministry of Water, Land and Air Protection, and Bill Dolan, Parks Canada. BC Parks data for campground use in the larger Kootenay District indicate an increase in overnight (i.e., campground) use of about 18% over the 1991-2000 period, although use has declined from peak levels in 1995. Boating use at BC Parks in the District also increased by 43% over the 1991-2000 period, but has been on a downward trend since 1996. Day use in District Parks actually declined by 16% over the 1991-2000 period.

[54] For estimates of the economic impacts of provincial parks in BC see *Current and Future Economic Benefits of British Columbia Parks*, Coopers Lybrand Consulting, April, 1996.

[55] Pers. comm., Neil Shuttleworth, Ministry of Forests.

[56] *Commercial and Recreational Hunting and Fishing Focus Groups*, Meeting Minutes, op. cit.

Visually sensitive areas in the backcountry are not mapped or identified specifically, but are defined in relation to, and managed to protect viewscapes from facilities and features. These backcountry recreation guidelines, as defined in the KBLUP-Implementation Strategy, state that any logging within 200 metres of a defined campsite, cabin, lake or river[57] should be designed so that modification may be discernible but not clearly evident from the site. For tenured areas, resource development should show evidence of good visual design.[58]

4.3.2. Anticipated Trends

The Resource Evaluation Area's strong historical growth, its proximity to the Alberta and US borders, Fernie's growing stature as an international ski destination and increasing worldwide demand for quality outdoor recreation experiences, suggest continued growth in the tourism industry and related investment in related facilities and infrastructure. The amenities and lifestyle of the Resource Evaluation Area are becoming increasingly popular for buyers of recreation properties, particularly by Alberta residents.[59]

Reflecting these demands, there are several commercial backcountry proposals being considered by Land and Water BC (LWBC) (including snowmobile / ATV touring and trail rides), as well as larger scale proposed developments within, or just outside the Resource Evaluation Area. These proposals will generate additional jobs and income for Resource Evaluation Area residents. However, it is the larger, commercial investments, such as possible further expansion of facilities at Fernie Alpine Resort[60] and the proposed Rolling Hills golf course / residential development proposed by Sparwood, that would have the most significant implications for tourism growth and economic impacts in the Resource Evaluation Area.[61] Major investments just outside of the Resource Evaluation Area, including the proposed Ktunaxa Kinbasket Tribal Council / Delta Hotels resort development at St. Eugene Mission, and the proposed upgrading of the Cranbrook Airport to handle direct international flights, if they proceed, would act as a further catalyst to tourism growth in the Resource Evaluation Area.

Demand for outdoor recreation in the Plan Area by residents and tourists will continue to increase over time in concert with slower population growth. Guided and recreational sport fishing and hunting demand will likely continue to grow, subject to resource and government policy constraints. Due to fish and wildlife population limitations and other factors (e.g., the need to diversify markets, extend the length of the season, and spread the costs of fixed investments over a broader client base), the trend to non-consumptive activities observed historically will likely continue. The commercial and non-commercial value of such experiences will likely continue to increase over time due to growing scarcity of wilderness experiences elsewhere. Growth in outdoor recreation activity in the Resource Evaluation Area may well be higher than the provincial average due to increasing demand pressure from Alberta.

---

[57] Backcountry facilities and features to which visual guidelines apply are defined in KBLUP-IS, Section 3.9.2 Operational Guidelines, Table 1.2 Management Guidelines for Backcountry Recreation. p 56.

[58] See KBLUP-IS, Section 3.9.2, *Operational Guidelines* and Table 1.2 *Management Guidelines for Backcountry Recreation*, p. 59.

[59] Fernie Chamber of Commerce website: *www.chamber.fernie.bc.ca.*

[60] A recent joint proposal by Fernie Alpine Resort and Island Lake Resort Group for expansion of golf and other resort facilities is now being considered by LWBC. The proposal involves a swap of part of the Mt. Fernie provincial park for an equal sized parcel of old growth forest near Island Lake. See *Island Lake, FAR Proposal Identifies Possible Future Plans*, Fernie Free Press, April 18, 2002.

[61] Pers. comm., Herb Hess, LWBC.

Limited carrying capacity within existing parks suggests that future wilderness tourism growth in the Resource Evaluation Area will rely increasingly on access to Crown lands outside PAs. This will require more intensive management of backcountry resources and features, including protection of viewscapes, vulnerable fish and wildlife populations, and wilderness attributes that are highly valued by a segment of the tourism market and becoming increasingly scarce. A key issue will be to meet a growing demand from motorized users (resident and non-resident) that can negatively affect some types of recreation, existing guide-outfitter and other wilderness tourism businesses. Without more intensive management of backcountry Crown lands, the growth potential in wilderness tourism and in the longer term, perhaps even existing levels of demand, may be at risk. Concerns have also been expressed by existing operators that the decision-making process for new commercial tenures does not adequately take into account the potential negative effects on their existing businesses.[62]

Already, there is some commercial recreation activity that is occurring without approvals from licensing agencies like LWBC. LWBC will increase efforts to manage and enforce commercial recreation tenure and policy to reduce impacts on existing licensees, but is currently hampered by a lack of resources.[63] In the absence adequate resources, unlicensed uses and conflicts between recreation user groups on Crown lands will continue to grow.

As noted above, MoF will be divesting itself of recreation sites and trails by March, 2004. In the meantime, most of these facilities will be open for public use in but not actively managed. MoF will be making these sites available to local groups or commercial operators, some of them possibly under LWBC tenures. Greater involvement by commercial operators in provincial parks is also possible, for example, at Mt. Fernie Provincial Park. The implications of this devolution are not yet clear, although it is possible that more active management and marketing by community groups or private operators could increase utilization and related economic development opportunities than under direct government administration.

Timber harvesting and mineral and energy exploration in the Plan Area increases road access to the forest land base and to recreation opportunities, but can negatively affect fish and wildlife populations and the attributes that contribute to increasingly scarce wilderness experiences. The implementation of visual quality objectives, other netdowns (e.g., for riparian areas and old growth management areas), and access management / de-activation required by the current timber management regime and the KBLUP-IS mitigates such impacts. However, in the longer term, even with these constraints, continued timber harvesting and potential mineral and energy development, if not appropriately managed, may cause further deterioration in scenic viewscapes and the resource values upon which wilderness recreation activities and related commercial interests are based.[64]

---

[62] *Commercial and Recreational Hunting and Fishing Focus Groups for the SRMMP*, Meeting Minutes, op. cit.

[63] Pers. comm., Herb Hess, LWBC

The extent of the timber harvesting land base (THLB) that is currently inoperable (i.e., is not commercially viable) will also limit the direct impacts of timber harvesting on recreation activity, at least in the shorter term. For example, less than 18% of the Plan Area is in the THLB. However, viewscape impacts extend beyond THLB boundaries and the lower elevation habitats are particularly critical in the life cycle of many species.[65] Also, as evidenced by historical trends, higher prices for wood fibre and products and new technology may expand the THLB, which in the longer term could exacerbate future resource conflicts and investment uncertainty for existing and potential commercial backcountry businesses.

4.4. AGRICULTURE / RANCHING

4.4.1. Current Activity and Historical Trends

As of 1996, total direct employment in agriculture in the Resource Evaluation Area communities was very limited at approximately 10 workers and accounted for a very small proportion of total employment and income. This is likely an underestimate of the sector's contribution because data on the rural portion of the Resource Evaluation Area is not available and because it is a supplementary rather than primary source of income.[66]

Most of the farming in the Resource Evaluation Area takes place within the Agricultural Land Reserve, almost all of which lies within private lands along the Elk River from Elko to Sparwood, and along the Upper Elk and Fording Rivers in the area south of Elkford. In addition, there are two small ALR areas close to the west boundary of the Resource Evaluation Area - one at the confluence of Lodgepole Creek and Wigwam River, and the second due north from the confluence, on Morrissey Creek.

Cattle ranching (primarily a cow-calf industry, with no finishing) is the most common form of agriculture in the Resource Evaluation Area, although there are some mixed farm operations. Access to Crown lands can be important for some agricultural operations. There are an estimated 5 ranchers grazing livestock on Crown lands in the Plan Area, and access to these lands is important to the viability of these operations.

---

[64] See survey of public preferences regarding conditions considered acceptable for recreation use. Most respondents (62%) preferred an unaltered setting but would accept sites where modifications were not evident. *1994 Forest, Range and Recreation Resource Analysis*, op. cit.

[65] THLB estimate from *Southern Rocky Mountain Management Plan Background Report*, 2002. Such area statistics can be misleading. For example, while lower elevation / riparian areas may comprise only a small proportion of overall Grizzly habitat, these areas are critical to survival at certain times of the year.

[66] Data for CSD C (only partly inside the Resource Evaluation Area) indicates that direct employment in agriculture is about 150, comprising about 10% of total employment in that area. Labour force data also indicates that there has been significant employment growth in this sector in CSD C over the 1981-96 period.

Range values in the Plan area are low to moderate for livestock, and generally moderate to very high for wildlife, particularly ungulates. Currently, livestock use is excluded in some parts of the Plan Area to avoid conflicts with critical habitat and foraging areas (e.g., in the Flathead area). In addition to livestock grazing, ten guide-outfitters utilize range within the Plan Area and Resource Evaluation Area, for pasturing of relatively small numbers of horses. Access to Crown lands for this purpose is important to guide-outfitters and the relatively low intensity of use does not generally conflict with wildlife grazing or foraging needs.[67]

Forest in-growth, encouraged by wildfire suppression, has led to a gradual decline over the past 50 years in the amount of open range available, which has the effect of exacerbating livestock / wildlife forage conflicts. The west side of the Wigwam River, along the southwest boundary of the Plan Area, are fire-maintained ecosystems that have historically, and are currently managed to restore grasslands.

Access to water is another important issue for the agricultural sector. There are approximately 100 water licenses for irrigation purposes in the Plan Area, which lies within the Fernie Water District.

4.4.2. Anticipated Trends

Growth in ranching activity is likely to be modest, constrained by availability of range future trends and volatile North American market conditions. However, there is likely to be a continuing demand for agricultural property by Alberta and US residents drawn by lifestyle considerations and relatively attractive land prices. Based on experience elsewhere in the province, there could be some modest growth potential for higher value produce such as organic vegetables, and crops like herbs, flower salad items, and other specialty produce for local markets in the Resource Evaluation Area.

4.5. TRAPPING

4.5.1. Current Activity and Historical Trends

There are roughly 40 licensed trappers active in the Resource Evaluation Area, although it is a primary activity for very few, if any participants.[68] Provincially, the number of trappers in the province has declined significantly over the past decade, while the number of non-licensed trappers (primarily First Nations) has remained approximately constant.[69]

4.5.2. Anticipated Trends

Historically, many registered traplines have been negatively affected by resource development. If historical trends continue (e.g. increasing fragmentation of older forests upon which important trapped species such as fisher and marten depend, as well as decreasing dependence on trapping as a source of livelihood), a continued decline in the total number of trappers in the Resource Evaluation Area could be expected.

---

[67] *Southern Rocky Mountain Management Plan Background Report*, 2002

[68] Stan Smith, pers. comm. Data for 1996 does indicate employment of 10 in fishing and trapping (residing in Sparwood), but it is not clear which of these sectors is the primary activity.

[69] Source: Ministry of Environment trapping statistics.

Concerns expressed by the trapping sector include:[70]

- Potential for negative effects of resource development on the viability and value of traplines, which are a form of commercial tenure
- Importance of access to traplines, particularly by ATVs and snowmobiles
- Protection of wildlife habitat important to furbearers such as riparian areas, old growth, wildlife trees and connectivity corridors
- Potential conflicts with back country recreation operations and settlement areas (carrying capacity and need for compensation in case of devaluation)

---

[70] Letter to Tom Volkers (Southern Rocky Mountain Management Plan) from Stan Smith, BC Trappers Association, April 1, 2002.

5. FIRST NATIONS

5.1. POPULATION AND TRADITIONAL TERRITORIES[71]

The Plan Area is in the traditional territory of the Ktunaxa Kinbasket First Nation. The Ktunaxa Nation consists of several communities in south eastern British Columbia, northern Idaho and north western Montana. The Ktunaxa traditionally followed "a nomadic seasonal subsistence year round determined by the location and timing of abundance of a broad range of animal and plant resources".[72] The Ktunaxa travelled extensively throughout the Wigwam, Elk and Flathead valleys, hunting, trapping, fishing and harvesting plants. They also travelled outside southeastern BC, crossing the Continental Divide to hunt bison on the prairies.

There are now seven bands in the Ktunaxa traditional territory - five in British Columbia and two in the United States. The Ktunaxa Kinbasket Tribal Council (KKTC) acts on behalf of the five BC bands, including: Lower Kootenay, St. Mary's, Shuswap, Columbia Lake, and Tobacco Plains.

None of these bands have communities within the Plan or Resource Evaluation Area. The Tobacco Plains reserve just east of Lake Koocanusa, is the nearest band in the Ktunaxa Kinbasket Tribal Council to the Resource Evaluation Area. Current population on this reserve, established in 1884, is estimated at about 100, including those in the non-status (i.e., off-reserve) category. There are also other bands within the Ktunaxa First Nation whose traditional territory includes the Resource Evaluation Area, but whose reserves lie outside the Resource Evaluation Area.

There is archaeological and other evidence of First Nations inhabitation in the Plan Area since the last glaciation over 10,000 years ago. There are a number of First Nations archaeological sites throughout the Plan Area, particularly between Sparwood and Elkford. Archaeological sites represent only those activities which have left a footprint on the landscape such as campsites or aboriginal mining. Traditional uses such as hunting, berry picking and travel routes may not be evident on the land, however are known through oral history. Traditional use studies of the Ktunaxa territory in the Plan Area are ongoing.

The most important private sector employers for the Tobacco Plains band include a small sawmill, garage, restaurant / gas bar and duty free store.[73] Economic dependency data based on the 1996 Census, while somewhat dated and subject to error due to the relatively small sample size, indicates that 47% of First Nations employment is in the public sector (primarily band administration, school, firehall and band hall). The economic dependency data also indicates that employment is more heavily concentrated in forestry, tourism and construction than in the Resource Evaluation Area as a whole.

---

[71] This section relies heavily on the *SRMMP Background Report*, 2002.

[72] *Southern Rocky Mountain Management Plan (SRMMP) Background Report*, 2002

[73] *Cranbrook Timber Supply Area Socio-Economic Analysis*, Pierce Lefebvre Consulting, March, 1995 and pers. comm. with Rosemary Nicholas, Ktunaxa Tribal Council and

Although there can be considerable variation among First Nations, they generally have higher unemployment rates than average in B.C. It is estimated that the unemployment rate on the Tobacco Plains reserve is presently about 40% compared to a current unemployment rate in BC of about 9%.[74] First Nations unemployment may be underestimated because of very low labour force participation. First Nations also tend to have higher rates of poverty and substandard housing, health and education services.

The Ktunaxa Kinbasket Tribal Council and member bands all have active economic development programs. Tourism has been identified as a significant economic opportunity. An important focus of all of the Bands in the Tribal Council is a major new resort complex, including hotel, casino and golf course, at St. Eugene Mission, north of Cranbrook. The KKTC has a management agreement with Delta Hotels that will provide connections to major tourism markets world wide, and offer training and employment opportunities. This project will provide a major economic stimulus for the Ktunaxa people and for the southern Rockies area.

The KKTC has generally indicated support of environmentally-sensitive timber harvesting. Many aboriginal communities see acquisition of forest tenures as essential to economic growth. Currently, the Ktunaxa do not have any timber tenures Small Business sales within the Plan Area, but undertake some silviculture work for the major licensees. The KKTC is also hoping to negotiate logging contracts with these companies, but lack of capital and technical skills are significant impediments to making such arrangements.[75]

First Nations have expressed concern that they do not receive an equitable share of forest industry employment in the area. Other concerns include:

- The impact of logging on fish and wildlife.
- The need to integrate timber harvesting with other sectors such as tourism, trapping, hunting, fishing and other traditional, spiritual and commercial uses.
- The need to preserve archaeological and cultural sites.

They have also expressed concerns that prolonged treaty negotiations will pre-empt resource-related economic opportunities. A traditional use survey based on oral presentations regarding lands used historically, as well as a number of overview assessments to identify sites of potential archaeological evidence, have been carried out.

5.2. TREATY NEGOTIATIONS

The existence of aboriginal rights was recognized and affirmed in Section 35(1) of the Constitution Act, 1982. Recent court decisions continue to clarify the nature of aboriginal rights. The Supreme Court of Canada's recent Delgamuukw decision affirmed the existence of aboriginal title and put the burden of proof on First Nations. The Ktunaxa First Nation traditional area lies in the Kootenay region. The SRMMP is not prejudicial to the treaty-making process.

---

[74] Sources: pers. comm. with Rosemary Nicholas, Ktunaxa Tribal Council and Statistics Canada, Labour Force Survey, February, 2002.

[75] Rosemary Nicholas and Peter Levy, op. cit.

While there has been some dissatisfaction with the Treaty process, the Ktunaxa Nation is currently negotiating an Agreement in Principle (Stage 4 of the Treaty process). Treaty negotiations represent an important longer term opportunity to address economic and self-government goals of First Nations.

6. REFERENCES

B.C. Ministry of Energy and Mines. 2001. **B.C.** ***Mineral Exploration Review, 2001.*** **Also, other years.**

B.C. Ministry of Energy and Mines. 2001. ***Exploration and Mining in British Columbia – 2001.*** **Also, other years.**

B.C. Ministry of Forests 1999. ***Timber Supply Review Cranbrook Timber Supply Area Analysis Report.***

B.C. Ministry of Forests Revenue Branch

B.C. Ministry of Forests. 2000. ***Major Primary Processing Facilities in British Columbia.***

BC STATS 2000. **Summary Statistics for Region 48: Howe Sound, July, 2000.**

BC STATS ***Community Facts***

BC STATS, June, 2001 and 2001 **Census**

BC Wildlife Branch, Guide Outfitter Reporting System. ***Wildlife Harvest Summary by Species and Region*****, for the period 1995-96 to 2000-01.**

BioQuest International Consulting, **(Bob Jamiesion) Background Information on the Natural Resources and Compensation Issues in the Area of Interest For a National Park Reserve in the Southeast Portion of the Flathead Drainage in B.C., Parks Canada**

British Columbia Local Area Economic Dependencies and Impact Ratios- 1996**, May, 1999**

Coast Writers Research and Communication, 1998. ***Environmental Quality and Regional Economic Development*****,**

Coopers Lybrand Consulting 1996. ***Current and Future Economic Benefits of British Columbia Parks*****, April, 1996.**

Cranbrook Forest District **PCRS Reports by Landscape Unit**

Eastfield Resources Ltd. **website, www.eastfieldgroup.com/eastfield/crowsnest.html**

Environmental Well-Being and Environmental Protection in the Pacific Northwest**, a consensus report by Pacific Northwest economists, December, 1995**

Fernie Chamber of Commerce **website**

Geological Survey of Canada website. **www.em.gov.bc.ca/Oil&gas/initiatives/Graphics/BCSedBasPipMap1.jpg**

SRMMP Project Team, 2002. ***Southern Rocky Mountain Management Plan Background Report*****, March 7, 2002.**

J. Paul & Associates, 1997. ***BC Guide Outfitter Industry*****,**

Kootenay Boundary Land Use Plan Implementation Strategy**, see Ch. 7** ***Evaluation*****, Draft, October, 1996.**

Kootenay Economic Development Magazine**, March, 2002**

Kootenay/Boundary Inter-Agency Management Committee 1997. ***Kootenay/Boundary Land-Use Plan Implementation Strategy, July 1997.***

Ministry of Finance and Corporate Relations**. Unpublished Reports and statistics provided for this report.**

Monahan, Patrick. 2002**. Presentation to Subsurface Resources Workshop, Feb. 2002**

P. Levy and Associates, 1997. ***Research and Assessment for a Kootenay-Boundary Economic Transition Plan*, September, 1997**

Pedersen, Larry (Chief Forester), B.C. Ministry of Forests. 2000. **Rationale for Allowable Annual Cut Determination, B.C. Ministry of Forests, December 2000, pg.41**

Pedersen, Larry (Chief Forester), B.C. Ministry of Forests. 2001**. *Cranbrook Timber Supply Area, Rationale for Allowable Annual Cut (AAC) Determination*, Effective January 2001.**

Pierce Lefebvre Consulting, 1995. ***Cranbrook Timber Supply Area Socio-Economic Analysis*, prepared for the Ministry of Forests. March 1995.**

Pierce Lefebvre Consulting, Stuart Gale and Associates and BriMar Consultants Ltd. 2001. ***Socio-Economic Impact Assessment of the Provincial Government's Strategic Land Use Plans on Key Sectors in British Columbia – Final Report*, B.C. Ministry of Sustainable Resource Management.**

Price Waterhouse Coopers 2000. ***The Mining Industry in British Columbia – 2000.* Also, other years.**

Southern Rocky Mountain Management Plan Background Report**, 2002.**

T. Power, 1996**. *Lost Landscapes and Failed Economies: A Search for a Value of Place*,**

Tembec Inc., 2000. **Press Release, *Tembec Announces the Official Opening of its $10.7 Million Cranbrook, B.C. Value Added Centre*, September 26, 2000.**

Tembec Inc., 2001. **Press Release, Tembec Shuts Down the Cranbrook Value Added Centre, November 2, 2001.**

Tourism British Columbia, 1998**. *British Columbia Visitor Study: The East BC Rockies Visitor Report*,**

Tourism British Columbia. ***BC Visitor Study: Report on Visitors to the BC Rockies Tourism Region.***

APPENDIX 1. CRANBROOK FOREST DISTRICT BILLING HISTORY

Volume Billed - m3	Forest License	Woodlot	License to Cut	TFL & Other	Total Administered	Small Business	Total Crown	Private Land & I.R.	Grand Total
1990	853,746	1,236	23,284	46,704	924,970	54,027	978,997	404,322	1,383,319
1991	875,163	9,674	55,760	40,520	981,117	117,432	1,098,549	266,818	1,365,367
1992	724,637	6,207	17,050	20,129	768,023	165,761	933,784	231,183	1,164,967
1993	755,232	3,615	43,808	22,699	825,354	134,803	960,157	308,324	1,268,481
1994	577,940	6,367	24,359	22,568	631,234	95,705	726,939	339,940	1,066,879
1995	739,073	1,917	37,531	958	779,479	105,289	884,768	295,236	1,180,004
1996	869,397	7,643	83,064	78,942	1,039,046	105,613	1,144,659	276,079	1,420,738
1997	698,257	6,708	9,884	79,857	794,706	75,534	870,240	268,858	1,139,098
1998	658,547	14,208	48,124	78,698	799,577	50,421	849,998	178,826	1,028,824
1999	685,757	18,102	12,853	77,602	794,314	125,404	919,718	195,321	1,115,039
2000	900,193	33,358	19,317	94,014	1,046,882	134,657	1,181,539	295,053	1,476,592
2001	774,556	31,521	13,833	71,020	890,930	108,733	999,663	252,786	1,252,449
Average 90 - 01	759,375					106,115	962,418		
Average 95 -01	760,826	16,208	32,087	68,727	877,848	100,807	978,655	251,737	1,230,392

Value Billed	Forest License	Woodlot	License to Cut	TFL & Other	Total Administered	Small Business	Total Crown	Private Land & I.R.	Grand Total
1990	$6,171,196	$522	$116,864	$261,713	$6,550,295	$434,933	$6,985,228		$6,985,228
1991	$3,947,847	$3,219	$238,351	$221,735	$4,411,152	$855,548	$5,266,700		$5,266,700
1992	$3,482,185	$9,284	$111,023	$12,468	$3,614,960	$1,365,907	$4,980,867		$4,980,867
1993	$5,467,323	$15,583	$470,721	$51,519	$6,005,146	$1,664,057	$7,669,203		$7,669,203
1994	$8,877,028	$96,110	$427,435	$301,308	$9,701,881	$2,474,957	$12,176,838		$12,176,838
1995	$12,836,467	$36,077	$905,800	$33,577	$13,811,921	$3,517,868	$17,329,789		$17,329,789
1996	$16,357,480	$34,745	$1,510,615	$1,969,478	$19,872,318	$3,637,224	$23,509,542		$23,509,542
1997	$12,406,535	$33,511	$211,754	$1,669,683	$14,321,483	$2,790,715	$17,112,198		$17,112,198
1998	$4,596,379	$162,321	$465,965	$1,126,986	$6,351,651	$1,133,065	$7,484,716		$7,484,716
1999	$8,914,438	$45,183	$216,664	$1,081,592	$10,257,877	$2,601,667	$12,859,544		$12,859,544
2000	$13,946,567	$195,345	$442,665	$1,436,499	$16,021,076	$2,875,291	$18,896,367		$18,896,367
2001	$11,825,903	$209,494	$226,499	$1,247,079	$13,508,975	$2,930,616	$16,439,591		$16,439,591
Average 95 -01	$11,554,824	$102,382	$568,566	$1,223,556	$13,449,329	$2,783,778	$16,233,107		$16,233,107

Average Value Billed - $ per m3	Forest License	Woodlot	License to Cut	TFL & Other	Total Administered	Small Business	Total Crown	Private Land & I.R.	Grand Total
1990	$7.23	$0.42	$5.02	$5.60	$7.08	$8.05	$7.14		$7.14
1991	$4.51	$0.33	$4.27	$5.47	$4.50	$7.29	$4.79		$4.79
1992	$4.81	$1.50	$6.51	$0.62	$4.71	$8.24	$5.33		$5.33
1993	$7.24	$4.31	$10.75	$2.27	$7.28	$12.34	$7.99		$7.99
1994	$15.36	$15.10	$17.55	$13.35	$15.37	$25.86	$16.75		$16.75
1995	$17.37	$18.82	$24.13	$35.05	$17.72	$33.41	$19.59		$19.59
1996	$18.81	$4.55	$18.19	$24.95	$19.13	$34.44	$20.54		$20.54
1997	$17.77	$5.00	$21.42	$20.91	$18.02	$36.95	$19.66		$19.66
1998	$6.98	$11.42	$9.68	$14.32	$7.94	$22.47	$8.81		$8.81
1999	$13.00	$2.50	$16.86	$13.94	$12.91	$20.75	$13.98		$13.98
2000	$15.49	$5.86	$22.92	$15.28	$15.30	$21.35	$15.99		$15.99
2001	$15.27	$6.65	$16.37	$17.56	$15.16	$26.95	$16.45		$16.45
Average 95 -01	$14.96	$7.83	$18.51	$20.29	$15.17	$28.05	$16.43	$0.00	$16.43

Source: B.C. Ministry of Forests Revenue Branch

Note: Totals exclude Deciduous, Waste (A), Waste (U) and Reject/Z category wood.

APPENDIX 2. FOREST INDUSTRY IMPACTS

APPENDIX 2-1 FOREST PRODUCT PROCESSING FACILITIES IN OR NEAR RESOURCE EVALUATION AREA

	TSR1 - 1993			TSR2 - 1998			April 2002			
Primary Processing	Log Input (000 m3)	Employment (PYs)	PYs/000 m3	Capacity (000 m3)	Employment (PYs)	PYs/000 m3	Log Input (000 m3)	Employment (PYs)	Allocated PYs (1)	PYs/000 m3
Tembec Cranbrook (2)	378	200	0.529	575	294 to 398			75		
Tembec Elko (3)	628	212	0.338				910	223	293	0.322
Tembec Head Office (4)		104						80		
Galloway Lumber (5)	248	105	0.423	210	81 to 88		210	89	89	0.423
Smaller Operations	104	150	1.44		84 to 89		98.5	80	80	0.812
Total	1,358	771	0.57		459 to 575	0.42	1,219	547	462	0.379
Secondary Processing	BDU									
Tembec Pulp Mill: Skookumchuck (6)	328,192	355	0.14			0.12		375		0.14
Tembec Value-Added: Cranbrook (7)								37	37	0.03
Total		1,126	0.71			0.54		959		

Notes:

1. Allocated PYs represent the primary wood processing employment that depends on timber harvested in the SRM Plan Area.
2. *Tembec employment reported for TSR-2 (1998) includes data for the Cranbrook and Elko mills.*
3. April 2002 Employment related to the Elko operation includes 223 PYs at the Elko mill, 39 PYs at the planer mill in Cranbrook that are attributed to the Elko production (52% of 75 PYs at the planer mill); and 31 PYs head office employees (half of 63 PYs at the Cranbrook Head Office net of the 17 PYs in woodlands).
4. Since 1993, approximately 20 Tembec head office employees were moved from the Cranbrook office to Skookumchuck.
5. The employment in 1993 represents all company employees excluding 3 woodlands staff, and excluding all logging and silviculture related contractors. Comparable employment for Galloway is not available in TSR-2 since harvesting employment data also include administration employment. The April 2002 data are based on discussions with Galloway and the 1993 data.
6. The pulp and paper coefficient in 1993 assumed that 35.2% of the wood consumed at the pulp mill in Skookumchuck originated from the TSA, which resulted in a coefficient of 0.14 PYs per 000 m3 of wood for pulp processing impacts (35.2% of 355 PYs divided by 896,136 m3 of wood harvested). The employment coefficient was assumed to be the same as in 1993 since detailed data are not readily available and discussions with Tembec suggest that the mill has not been altered since 1993 (except for a co-generation plant).
7. The Tembec value-added plant shutdown in November 2001 but plans to re-open after some additional capital investment.

Source:

Pierce Lefebvre Consulting, Cranbrook Timber Supply Area Socio-Economic Analysis, prepared for the Ministry of Forests, 1995.

Estimated Output Capacity: B.C. Ministry of Forests, Major Primary Processing Facilities in British Columbia, 2000;

Estimated Log Input Capacity: B.C. Ministry of Forests, Timber Supply Review, Cranbrook Timber Supply Area Analysis Report, 1999.

Estimated Log Input and Employment: above documents and discussions with licensees and with Ministry of Forest representatives in Cranbrook.

APPENDIX 2-2 RESOURCE EVALUATION AREA AND PLAN AREA CONTRIBUTIONS TO PROCESSORS' LOG INPUTS

	Cranbrook TSA	**Resource Evaluation Area**	**Plan Area**
Total Land Area (ha)	1,483,083	754,463	440,614
Timber Harvesting Land Base (ha)	407,058	114,593	78,179
Share of THLB	100%	28%	19%
Cranbrook TSA AAC (m3)	871,000		
Implied AAC Contribution (m3)	871,000	245,200	167,283
Private and Federal Lands (ha)	228,764	149,679	68,386
Share of Private and Federal	100%	65%	30%
Average Private and Federal Harvest (m3)	252,000		
Implied Share of Private Harvest (m3)[1]	252,000	164,882	75,332
Total Crown AAC and Private Harvest (m3)	1,123,000	410,082	242,615
Total Primary Processor Logs Input (m3)	1,219,000		
Implied Source of Logs Input			
Provincial Crown	71%	20%	14%
Private and Federal	21%	14%	6%
Total	92%	34%	20%

Note:
Prorating the annual private land timber harvest based on the share of private lands in the Resource Evaluation Area (REA) and Plan Area is questionable, since more of the private lands in the REA are Managed Forest Lands, compared to the Cranbrook Forest District as a whole. Direct estimates by industry participants, however, yield a similar result of about 165,000 m3 per annum for the REA.

Source:
Land Areas: Cranbrook Forest District PCRS Reports by Landscape Unit.
AAC and Harvest: B.C. Ministry of Forests.
Primary Processor Logs Input: As per Appendix 2-1

DRAFT

APPENDIX 2-3 EMPLOYMENT COEFFICIENTS

Provincial Impacts by Sector (1)	TSR1 - 1993	TSR2 - 1998	April 2002	2002 - with Value-Added Plant
Timber Harvesting (2)	0.30	0.36	0.36	0.36
Silviculture (2)	0.07	0.05	0.05	0.05
Wood Processing (3)	0.57	0.42	0.38	0.41
Pulp & Paper Processing (3)	0.14	0.12	0.14	0.14
Total Direct Employment	1.08	0.95	0.93	0.96
Indirect & Induced				
Regional	0.625	0.43	0.49	0.54
Outside Region, within B.C.	0.80	0.48	0.68	0.70
Sub-total Indirect & Induced	1.425	0.91	1.17	1.24
Total Direct & Indirect Employment (4)	2.506	1.86	2.10	2.20

Notes:

1. TSR-1 and TSR-2 differentiated between the TSA and Provincial impacts. Most direct impacts are inside or near the Cranbrook TSA and as a result, this report does not differentiate between the region and the provincial impacts.
2. The timber harvesting and silviculture coefficients increased overall between 1993 and 1998 partly as a result of the Forest Practices Code. The current coefficients for timber harvesting and silviculture are assumed to have remained at the 1998 level
3. The current wood processing and pulp and paper coefficients are based on current processing activity as described in the following table.

The employment multipliers depend on various assumptions made regarding the impacts a loss of employment might have on other economic sectors and whether or not the workers who lose their jobs will leave the region (migration ratios) or remain in the area (no migration ratios). For the purpose of this study (April 2002), the multipliers assume the migration scenario. This will overstate slightly the loss of employment that would occur in the first one or two years following the loss of jobs as workers would likely remain in the area at least until they no longer collect Unemployment Insurance and until they have secured employment elsewhere. The TSR-2 (1998) study used a mix of no-migration and migration multipliers.

DRAFT

APPENDIX 2-4 FOREST INDUSTRY IMPACTS OF CROWN LAND AAC

	April 2002 - Cranbrook TSA (Excl. Value-Added Plant)				SRM Resource Evaluation Area (Excl Private Land)			SRM Plan Area		
Provincial Impacts by Sector	Coefficient	Total PYs	Empl Income ($million)	B.C. Employee Inc.Taxes	Total PYs	Empl. Income ($million)	B.C. Employee Inc.Taxes	Total PYs	Empl. Income ($million)	B.C. Employee Inc.Taxes
Direct (All in Cranbrook Region)										
Timber Harvesting	0.36	313.6	$14.3	$1.2	88.3	$4.0	$0.3	60.2	$2.7	$0.2
Silviculture	0.05	43.6	$2.0	$0.2	12.3	$0.6	$0.0	8.4	$0.4	$0.0
Wood Processing	0.38	330.2	$14.8	$1.2	93.0	$4.2	$0.3	63.4	$2.8	$0.2
Pulp & Paper Processing	0.14	121.9	$6.4	$0.5	34.3	$1.8	$0.1	23.4	$1.2	$0.1
Total Direct	0.93	809.2	$37.5	$3.1	227.8	$10.5	$0.9	155.4	$7.2	$0.6
Indirect & Induced										
Regional	0.49	427.2	$14.6	$1.2	120.3	$4.1	$0.3	82.0	$2.8	$0.2
Outside Region, within B.C.	0.68	590.4	$20.1	$1.7	166.2	$5.7	$0.5	113.4	$3.9	$0.3
Sub-total Indirect & Induced	1.17	1,017.6	$34.7	$2.9	286.5	$9.8	$0.8	195.4	$6.7	$0.6
Total B.C. Impacts	2.10	1,826.8	$72.1	$6.0	514.3	$20.3	$1.7	350.9	$13.9	$1.2
Cranbrook Regional Impacts - Direct, Indirect and Induced	1.42	1,236.43	$52.0	$4.3	348.07	14.65	1.22	237.47	9.99	0.83
Provincial Government Revenues	$ per m3		Total Revenues ($ million)			Total Revenues ($ million)			Total Revenues ($ million)	
Stumpage and Related Payments	$16.45per m3		$14.33million			$4.03million			$2.75million	
Forest Industry Taxes	$8.12per m3		$7.07million			$1.99million			$1.36million	
Employee Income Taxes	$6.90per m3		$6.01million			$1.69million			$1.15million	
Total Provincial Gov.t Revenues	$31.47per m3		$27.41million			$7.72million			$5.26million	
Timber Harvesting Land Base and AAC				% of Total			% of Total			% of Total
Timber Harvesting Land Base	407,058hectares			100.0%	114,593Hectares		28.2%	78,179hectares		19.2%
AAC	871,000m3									

Notes: Does not add due to rounding.

1. The average annual pre-tax incomes are based on 1998 Statistics Canada data as reported in TSR-2 Cranbrook TSA Analysis Report; represents weighted average annual pre-tax income less benefits for forest sector and other workers; tax rate assumptions are also from that report and as a result are based on 1998 tax rates.

Average Annual Pre-Tax Incomes		Assumed Tax Rate	Provincial (1/3)
Logging and Forestry Services:	$45,550	25%	8.3%
Solid Wood Manufacturing:	$44,915	25%	8.3%
Pulp and Paper Mills:	$52,250	27%	9.0%
Indirect and Induced:	$34,075	23%	7.7%

2. The stumpage rate is based on the 2001 stumpage for the Cranbrook Forest District of $16.45 per m3. This is also equal to the average stumpage revenue by m3 for the years 1995 to 2001 ($16.43).
3. Other forest industry taxes are based on estimates by PriceWaterhouseCoopers for 1998 as reported in the TSR-2 report; other forest industry taxes include taxes for logging, corporate income, corporate capital, sales, property and electricity.

DRAFT

APPENDIX 3. CHARACTERISTICS OF THE TIMBER HARVESTING LAND BASE

		Cranbrook F.D.[1]		Resource Evaluation Area[2]		Plan Area[2]	
		Hectares	% of Total	Hectares	% of Total	Hectares	% of Total
Total Area		1,483,083	100.0%	754,797	100.0%	446,381	100.0%
Private and Federal Land		228,764	15.4%	151,462	20.1%	70,131	15.7%
Current THLB		439,190	29.6%	123,495	16.4%	85,298	19.1%
		Hectares	% of THLB	Hectares	% of THLB	Hectares	% of THLB
Elevation Over 1800 Meters		35,448	8.1%	14,226	11.5%	6,969	8.2%
Immature Forest Stands			71%	93,192	75.5%	64,437	75.5%
Scenic Corridors				7,496	6.1%	7,397	8.7%
VQOs	Retention	2,785	0.6%				
	Partial Retention	24,367	5.5%				
	Modification	9,303	2.1%				
	Sub-Total	36,455	8.3%				
Recreation							
	Highest	3,282	0.7%				
	High	8,155	1.9%				
	Moderate	116,326	26.5%				
	Sub-Total	127,763	29.1%				
Community Watersheds		24,353	5.5%	1,064	0.9%	1,064	1.2%
Domestic Watersheds		52,376	11.9%	2,203	1.8%	2,122	2.5%
Caribou Habitat		36,076	8.2%	0	0.0%	0	0.0%
Ungulate Winter Range							
	Type 1	47,564	10.8%				
	Type 2	23,691	5.4%				
	Type 3	31,982	7.3%				
	Type 4	4,088	0.9%				
	Sub-Total	107,325	24.4%	39,635	32.1%	32,484	38.1%
FMER							
	Managed Forest	36,441	8.3%				
	Open Forest	39,361	9.0%				
	Open Range	19,692	4.5%				
		95,494	21.7%				
Connectivity Corridors		Not Modeled		72,904	59.0%	56,021	65.7%
Biodiversity Emphasis Options (THLB)							
	High		9.9%	13,490	10.9%	13,490	15.8%
	Intermediate		44.5%	106,422	86.2%	70,111	82.3%
	Low		45.6%	3,584	2.9%	1,696	2.0%
	Total		100.0%	123,496	100.0%	85,298	100.0%

Notes:

1. Source: Cranbrook Timber Supply Area Analysis Report, Timber Supply Review, December 1999, B.C. MoF
2. Source: Southern Rocky Mountains Management Plan, GIS data, MSRM, 2002.

APPENDIX 4. MINING INDUSTRY IMPACTS

	Impacts from Mining Industry in Resource Evaluation Area			
Provincial Impacts by Sector	Multiplier	Total PYs	Total Income ($million)	B.C. Employee Inc.Taxes
Direct (All in Resource Evaluation Area)				
Coal Mining		2,563.0	$169.9	$17.0
Exploration		50.0	$2.5	$0.2
Total Direct	1.00	2,613.0	$172.4	$17.2
Indirect & Induced				
Regional	0.61	1,593.9	$54.3	$4.2
Outside Region, within B.C.	0.69	1,803.0	$61.4	$4.7
Sub-total Indirect & Induced	1.30	3,396.9	$115.7	$8.9
Total B.C. Impacts	2.30	6,009.9	$288.2	$26.1
Resource Evaluation Area Impacts – Direct, Indirect and Induced	1.61	4,206.93	$226.7	$21.4
Government Revenues			Total Revenues ($ million)	
Mining Industry Taxes (includes provincial and municipal taxes)			$38.6million	
Employee Income Taxes			$26.08million	
Total Gov.t Revenues			$64.72million	

Notes: Does not add due to rounding.

1. The 2001 employment is from Ministry of Energy and Mines. MEM reports employment in coal mining in the Kootenays at 2,338 PYs for 2000 and 2,563 PYs for 2001 By comparison, PriceWaterhouseCoopers reports employment of 2,172 PYs for 2000.
2. The average annual pre-tax income for mining employees are based on the PriceWaterhouseCoopers 2000 report on the Mining Industry in British Columbia and they exclude benefits of $11,500 per employee. The exploration averages are set at $50,000 to reflect the lower wages in that sector. The indirect and induced wages and benefits are based on the Statistics Canada data and are the same as those used for the forest sector.

Average Annual Pre-Tax Incomes		Assumed Tax Rate	Provincial (1/3)
Mining Employees	$66,300	30%	10.0%
Exploration	$50,000	26%	8.7%
Indirect and Induced:	$34,075	23%	7.7%

3. The employment multiplier for the region represents the Fernie employment ratio (migration) from B.C. Stats, B.C. Local Area Economic Dependencies and Impact Ratios - 1996. The multiplier of 2.3 for the province mining industry (1.3 indirect and induced jobs per direct job) is comparable to the multiplier used for wood processing in the forest impact analysis.
4. Similar assumptions as were used in the forestry analysis are used in this table.
5. The mining industry taxes are based on the 2000 direct tax payments to the provincial and municipal governments from mining of $151 million (includes the mining tax, mineral tax, provincial sales taxes, income, property, school and other taxes). Some 25.6% of these are allocated to the Kootenay coal industry based on net mining revenues for coal accounting for 29.4% of total net mining revenues in 2000 for B.C. and on the Kootenays accounting for 87% of all coal production in the province. Source: PriceWaterhouseCoopers, The Mining Industry in British Columbia, 2000.

APPENDIX 5. RESOURCE EVALUATION AREA MINING AND ENERGY GIS DATA

The B.C. Ministry of Energy and Mines has developed extensive geological maps of B.C. using a Geographic Information System (GIS) that maps mineral occurrences, mineral tenures and mineral potential for all of B.C. This Appendix summarizes the GIS data for the Resource Evaluation Area.

Mineral Occurrences	Coal			Mineral		
	Private	Crown & Other	Total	Private	Crown & Other	Total
Anomaly	1	11	12	0	0	0
Developed Prospect	0	2	2	0	1	1
Past Producer	0	4	4	0	0	0
Producer	0	5	5	1	1	2
Prospect	0	1	1	1	23	24
Sub-Total	1	23	24	2	25	27

Note: The project team could not identify the two producing mineral deposits shown by the GIS data and they may be past producers or data anomalies.

Coal and Mineral Tenures	Private	Crown & Other	Total
Total Hectares	151,462	603,335	754,797
Coal Tenures	3,448	48,515	51,963
Mineral Tenures	3,802	45,665	49,466
% of Total Area	100%	100%	100%
Coal Tenures	2%	8%	7%
Mineral Tenures	3%	8%	7%

Mineral Potential	Metals			Industrial Minerals		
(hectares)	Private	Crown & Other	Total	Private	Crown & Other	Total
0 (No values)	123,518	123,411	246,929	67,883	68,598	136,480
1 (Rank 1-88)	11	570	580			
2 (Rank 89-177)	98	24,421	24,519			
3 (Rank 178-266)	0	0	0			
4 (Rank 267-355)	9,284	199,076	208,360			
5 (Rank 356-445)	15,322	2,816	18,138	6	21,462	21,469
6 (Rank 446-534)	660	65,816	66,477	1,661	100,059	101,720
7 (Rank 535-623)	2,570	187,224	189,794	55,573	295,649	351,223
8 (Rank 624-712)	0	0	0	26,327	32,638	58,965
9 (713-794)	0	0	0	11	84,929	84,941
Sub-Total	151,462	603,335	754,797	151,462	603,335	754,797

Mineral Potential	Metals			Industrial Minerals		
(proportion of land base)	Private	Crown & Other	Total	Private	Crown & Other	Total
0 (No values)	82%	20%	33%	45%	11%	18%
1 (Rank 1-88)	0%	0%	0%	0%	0%	0%
2 (Rank 89-177)	0%	4%	3%	0%	0%	0%
3 (Rank 178-266)	0%	0%	0%	0%	0%	0%
4 (Rank 267-355)	6%	33%	28%	0%	0%	0%
5 (Rank 356-445)	10%	0%	2%	0%	4%	3%
6 (Rank 446-534)	0%	11%	9%	1%	17%	13%
7 (Rank 535-623)	2%	31%	25%	37%	49%	47%
8 (Rank 624-712)	0%	0%	0%	17%	5%	8%
9 (713-794)	0%	0%	0%	0%	14%	11%
Sub-Total	100%	100%	100%	100%	100%	100%

Coal Bed Methane	**Private**	**Crown & Other**	**Total**
Total Hectares	151,462	603,335	754,797
Coal Bed Methane Potential	37,888	30,463	68,351
% of Total Area	100%	100%	100%
Coal Bed Methane Potential	25%	5%	9%

Petroleum and Gas Tenures	**Private**	**Crown & Other**	**Total**
Total Hectares	151,462	603,335	754,797
Drilling License	7,787	31,989	39,776
Permit Class B	1,365	3,283	4,648
Petroleum and Gas Leases	7	16,212	16,219
Sub-Total	9,160	51,484	60,643
% of Total Area	100%	100%	100%
Drilling License	5%	5%	5%
Permit Class B	1%	1%	1%
Petroleum and Gas Leases	0%	3%	2%
Sub-Total	6%	9%	8%

Source: B.C. Ministry of Energy and Mines data as reported by MSRM.

APPENDIX 6. ARIS EXPLORATION EXPENDITURES

	Plan Area		East Kootenay		%
	Current Dollars	1986 Dollars	Current Dollars	1986 Dollars	
1970	24,900	80,323	71,897	231,926	35%
1971	28,600	89,655	136,296	427,260	21%
1972	16,400	49,102	56,084	167,916	29%
1973	15,000	41,667	116,600	323,889	13%
1974	12,800	32,080	118,600	297,243	11%
1975	53,500	121,041	392,400	887,783	14%
1976	213,300	449,053	523,041	1,101,139	41%
1977	27,526	53,658	648,733	1,264,586	4%
1978	81,096	145,074	1,047,387	1,873,679	8%
1979	115,186	188,830	1,371,626	2,248,567	8%
1980	48,333	71,924	1,061,081	1,578,989	5%
1981	928,104	1,229,277	2,879,975	3,814,536	32%
1982	25,466	30,425	863,513	1,031,676	3%
1983	12,619	14,259	868,650	981,525	1%
1984	8,277	8,958	921,902	997,729	1%
1985	42,347	44,111	1,076,963	1,121,836	4%
1986	60,691	60,691	2,422,358	2,422,358	3%
1987	711,796	681,797	2,897,269	2,775,162	25%
1988	270,419	249,004	2,989,988	2,753,212	9%
1989	347,588	304,901	1,752,070	1,536,904	20%
1990	92,100	77,071	3,774,489	3,158,568	2%
1991	20,000	15,848	1,895,929	1,502,321	1%
1992	15,512	12,109	1,386,777	1,082,574	1%
1993	136,089	104,363	970,632	744,350	14%
1994	252,954	193,538	1,287,201	984,851	20%
1995	314,081	235,267	1,706,998	1,278,650	18%
1996			1,708,907	1,260,256	0%
1997	400,832	292,365	2,459,631	1,794,042	16%
1998	346,356	248,998	2,301,479	1,654,550	15%
1999	81,835	57,793	2,995,076	2,115,167	3%
2000	193,510	133,088	3,047,367	2,095,851	6%
2001	25,792	17,666	933,678	639,505	3%
Total 1970-2001	4,923,009	5,333,934	46,684,595	46,148,600	11%

Notes:

1. Includes only mineral exploration (excludes coal)
2. Includes only what is reported on the Claim Assessment Reports; does not include all company exploration expenditures.

Source: B.C. Ministry of Energy and Mines.

Southern Rocky Mountains Management Plan
Base Case
Environmental Assessment

Flathead River Valley

Prepared for
Ministry of Sustainable Resource Management
Resource Management Division
Victoria, B.C.
V8W 2H1

Prepared by

TRITON
ENVIRONMENTAL CONSULTANTS LTD.

201- 1157 5th Avenue
Prince George, B.C
V2L 3L1

December 13, 2002

Executive Summary

This report provides a summary of current management practices and existing conditions for select environmental values of concern in the Southern Rocky Mountains Management Plan (SRMMP) area. Using a multiple accounts assessment framework, this document attempts to describe the implications of current management practices in the absence of the Southern Rocky Mountains Management Plan (i.e., Base Case management regime). As such the document focuses on the management direction outlined in the *Kootenay Boundary Land Use Plan Implementation Strategy* (1997) as well as the *Higher Level Plan Order* (January 2001)[1]

The purpose of the Base Case is to provide a "benchmark" to which the SRMMP can be compared. However, it should be emphasized that this report is limited in scope and does not include some of the most recent mapping initiatives (e.g., ungulate winter range, grizzly bear) nor any spatial or temporal modelling. A more detailed ecological inventory (i.e., PEM/TEM, site series, stand structure) should be used during future monitoring and/or conservation risk assessments as it becomes available. This information will be required to adequately monitor ecological trends related to variation in natural disturbance regimes as well as natural variation in stand structure, composition and function. Although there are emerging methods and decision-making tools that would have been useful to include in this Base Case analysis (e.g., DART, timber/habitat supply models) time and resources precluded their use.

Despite these shortcomings, a largely qualitative evaluation of current management practices was able to identify strengths and weaknesses related to current management practices in the SRMMP area. The potential implications and relative risks of continuing with the current management regime to select environmental accounts are summarized below:

Environmental Account	Implications of Base Case Management
Old Growth	• There are relatively few mature or old forest stands currently present in the MSdk and ICHmk1, with slightly greater amounts of mature and old forest present in the ESSFdk non-contributing areas. • Although this report could not address the relative abundance of mature and old forest over time, the previous analysis of the KBLUP-IS (1996) did provide an estimation of risk based on assigned BEOs and the deviation of seral stage distribution from natural levels over discrete time periods (0,20,70 and 250 years). Reviewing the landscape units that are contained in the SRMMP area indicated that over the short-term (next 20 years), valley bottoms habitats, particularly those that occur in the West Flathead, Wigwam, Lower Elk, West Elk, Upper Elk and Fording River Landscape Units are at high risk to very high risk. Over the mid to long term, risks decline to moderate-low levels in the Flathead and Wigwam but remain high throughout the Elk valley. • Overall, some mature and old forests will remain on the THLB to meet the Kootenay Boundary HLPO, VQO objectives as well as other FPC requirements (e.g., *Riparian Reserve Zones, OGMAs, Wildlife Tree Patches*), however, there will be fewer large areas of mature and old forest present in valley bottom forests. • Old growth management areas (OGMAs) need to be spatially identified that provide adequate ecosystem representation at the variant level, but

---

[1] Although the most recent HLP amendment (October 2002) should be considered as Base Case management, this report has assumed the 2001 HLP order to be consistent with the Socio-Economic Multiple Accounts Assessment, which was completed before the October 2002 amendment.

	preferable at the site series level to ensure rare ecosystems are captured.
Connectivity Corridors	• The Kootenay-Boundary HLP Order states that connectivity corridor objectives will be addressed using the mature and old forest seral targets available within each BEO/NDT combination. Whether there is adequate mature and old forest to meet the connectivity corridor objectives is not clear at this time. Overall, the matrix of crown and private lands in the SRMMP area poses significant challenges to maintaining regional connectivity. As such the risks to species dependent on connectivity corridors remains high in the Elk Valley with somewhat lower risks (moderate) in the remaining plan area.
Ungulate Winter Range	• As part of the *Forest Practices Code* (OPR), establishment of *Ungulate Winter Ranges* (UWR) suggests low to moderate risks to ungulate populations. However, refining access as well as recreation management strategies would further reduce the risks to ungulate populations over the long term. • Most ungulate populations are believed to be stable to increasing including white-tailed deer, mule deer, elk, moose, and mountain goat. Bighorn sheep herds are stable in the Elk Valley and Lizard (Elko) but slightly declining in the Wigman valley.
Grizzly Bear	• The KBLUP *Implementation Strategy* outlined grizzly bear management guidelines that addressed maintenance of critical feeding areas as well as access management. In addition, the Higher Level Plan Order includes provisions to maintain mature and/or old forest adjacent to avalanche chutes important to grizzly bears. The amount of mature and old forest available, however, is dependent on how much remains after complying with other HLPO objectives (e.g., OGMAs, caribou). As such, the extent to which this objective can be applied across the plan area is unclear at this time. Although the overall intent of the objective is viewed as a positive measure to reduce disturbance to grizzly bear feeding and security areas, implementation of this objective has been contingent on the completion of avalanche chute mapping, which has only recently been completed. Hence, this objective has the potential to maintain habitat effectiveness in the future; however, until the objective is fully implemented operable portions of grizzly bear habitats remain vulnerable to forest harvesting activities. • Overall, the relative risks to grizzly bears will vary throughout the plan area. Risks will remain high on private land as well as areas where seral stage distribution may be incompatible over the long term such as Low BEOs. However, over the majority of SRMMP area, risks are moderate assuming the HLPO and KBLUP-IS is fully implemented. In particular, the long term population viability of grizzly bear is contingent upon implementation of effective access as well as recreation management strategies. Without these, grizzly bears will remain at high risk where high levels of human activity and bear habitats overlap.
Fish Habitat	• The potential for future road development to negatively impact fish habitat will increase over time. However, recommendations outlined in the FPC *Riparian Management Area Guidebook* partly reduce the risk to fisheries values. Overall, the risk to fish habitat is moderate, however, risks are higher for smaller streams (S4, S5, S6) due to a lack of adequate protection. In addition, a lack of a complete inventory for bull trout (a blue-listed species) suggests bull trout populations remain at risk.

Table of Contents

1.0 INTRODUCTION 1

1.1 BACKGROUND 1

2.0 METHODS 2

2.1 DEFINING CURRENT MANAGEMENT 2
2.2 THE KOOTENAY BOUNDARY HIGHER LEVEL PLAN ORDER 3
2.3 KEY ENVIRONMENTAL ACCOUNTS 4
2.4 ASSUMPTIONS 4
Data Limitations 5
2.5 RISK ASSESSMENT 6

3.0 OVERVIEW OF SRMMP AREA 8

4.70 BIODIVERSITY 9

BACKGROUND 9

5.0 SERAL STAGE DISTRIBUTION AND OLD GROWTH 12

BACKGROUND 12
CURRENT STATUS AND ANTICIPATED TRENDS 13
ECOSYSTEM REPRESENTATION AND RARE FOREST TYPES 17

6.0 WILDLIFE TREE RETENTION 17

BACKGROUND 17
CURRENT STATUS AND ANTICIPATED TREND 17

7.0 RIPARIAN ECOSYSTEMS 18

BACKGROUND 18
CURRENT STATUS AND ANTICIPATED TRENDS 18

8.0 CONNECTIVITY 19

BACKGROUND 19
CURRENT STATUS AND ANTICIPATED TRENDS 19

9.0 UNGULATE WINTER RANGE 21

BACKGROUND AND ASSUMPTIONS 21
CURRENT STATUS AND ANTICIPATED TRENDS 22

10.0 GRIZZLY BEAR 23

BACKGROUND AND ASSUMPTIONS 23
CURRENT STATUS AND ANTICIPATED TRENDS 24

11.0 OTHER WILDLIFE AND PLANT SPECIES AT RISK 26

BACKGROUND 26
CURRENT STATUS AND ANTICIPATED TREND 26

120.0 FURBEARERS (MARTEN) 26

BACKGROUND AND ASSUMPTIONS 26
CURRENT STATUS AND ANTICIPATED TRENDS 27

13.0 FISHERIES 27

BACKGROUND AND ASSUMPTIONS 27
CURRENT STATUS AND ANTICIPATED TREND 27

14.0 CONCLUSIONS 28

15.0 REFERENCES 29

APPENDIX 1.0 THE AMOUNT OF CROWN FOREST LAND BASE (CFLB) BY LANDSCAPE UNIT AND BIOGEOCLIMATIC SUBZONE/VARIANT 32

APPENDIX 2.0 A LIST OF RED AND BLUE-LISTED VERTEBRATE SPECIES AND RARE PLANT COMMUNITIES KNOWN TO OCCUR OR HAVE THE POTENTIAL TO OCCUR IN THE SRMMP AREA (CDC 2002). 35

1.0 Introduction

This Base Case report summarizes the expected changes and relative risks to the environment (biodiversity, wildlife, and fish) that would result if status quo management were to continue in the Southern Rocky Mountain Management Plan (SRMMP) area. The purpose of the Base Case is to provide a "benchmark" by which the recommended SRMMP can be compared. The Base Case assumes a continuance of current management practices and attempts to address qualitatively the trends for each environmental value in the absence of the SRMMP. Although current management practices have been guided by the regional land use plan and the *Kootenay-Boundary Land Use Plan - Implementation Strategy* (1997), only certain provisions of the KBLUP have been established as higher-level plan objectives. Therefore, only those higher level plan objectives as set out in the *Kootenay-Boundary Higher Level Plan Order* (2000) are considered current management as well as all *Forest Practices Code* (FPC) regulations (e.g., Riparian Reserve Zones). Although emerging direction from the new results-based *Forest Practices Code* (FPC) should also be considered as part of the Base Case management regime, specific details regarding the regulations and standards remain unknown at this time. Current management practices related to the mining sector include legislation and regulations outlined in the *Mines Act, Mineral Exploration* (MX) *Code, Mining Rights Amendment Act* and the *Environmental Assessment Act*.

1.1 Background

Although the Southern Rocky Mountain Management Plan Area was originally identified as a potential *Wildlife Management Area* (WMA) under the B.C. *Wildlife Act*, the current government determined that additional resource management direction was required to adequately balance social, economic and environmental values. As such the purpose of the Southern Rocky Mountains Management Plan (SRMMP) is to refine and coordinate the implementation of the KBLUP strategies on an area-specific basis and to provide recommendations for Landscape Unit (LU) or lower level planning.

The Southern Rocky Mountain Management Plan (SRRMP) covers the southeast portion of the East Kootenays and extends from the B.C./Montana border north through the Flathead and Wigwam watersheds and portions of the Elk and Bull River watersheds to the southern boundary of Heights of the Rockies Provincial Park (an estimated 450,000 ha). For resource evaluation purposes, however, the area has been broadened from the previous Conservation Area boundary in order to undertake a scientifically based process, which works on the premise of ecosystem management. The resource evaluation area covers approximately one half of the Cranbrook Forest District (754,797 ha) and encompasses 18 complete landscape units (Table 1)

Table 1. Landscape Units in the Southern Rocky Mountain Management Plan Area * and their assigned Biodiversity Emphasis Option (BEO)

Landscape Unit	Biodiversity Emphasis
Upper Elk	Intermediate
Lower Elk	High
West Elk	High/Intermediate
East Elk	Low
Fording River	Intermediate
Alexander Line	Intermediate
Upper Bull	Intermediate
Galbraith-Dibble	Intermediate
Iron Sulphur	Intermediate

Corbin Creek	Low
Sand Creek	Intermediate
Jaffray-Baynes Lake	Low
Galton	Low
Lodgepole-Bighorn	High/Intermediate
Wigwam River	High
Upper Flathead	Intermediate
West Flathead	Intermediate
East Flathead	Intermediate

* as established in KBLUP HLP Order

2.0 Methods

The methods used to assess potential impacts of land use management are consistent with the approaches outlined in two documents including: (i) *Environmental Risk Assessment (ERA): an approach for assessing and reporting environmental conditions* (MELP 2000): (ii) draft *Provincial Multiple Accounts Assessment Guidelines* (2001).

It should be emphasized that the Multiple Accounts Assessment (MAA) definition of the Base Case differs somewhat from how the Base Case is defined by the *Environmental Risk Assessment* (ERA) approach adopted by the Ministry of Environment Lands and Parks (see below). In essence, the MAA definition of the Base Case includes both the implications of current management practices today as well as forecasting those potential impacts into the future. The ERA approach defines the Base Case as the 'natural' or undisturbed condition to which all other management regimes should be compared. Although the MAA appears to compare alternative land use scenarios only to existing management practices, the MAA Base Case implicitly considers the historic conditions and past development impacts when evaluating current conditions.

2.1 Defining Current Management

There are a variety of existing management practices and policies that direct resource development activities (e.g., forestry, mining) and environmental protection in B.C. These management practices need to be evaluated when determining the implications of Base Case management specific to the Cranbrook Forest District. Because implementation of certain policy initiatives can be uncertain (e.g., Results-Based Forest Practices Code) or dependent on implementation of the SRMMP many current management practices are difficult to quantify. Some of the key management practices and procedures considered as Base Case management include:

- KBLUP Higher Level Plan Order (January 2001)
- Timber Supply Review II (1999)
- Forest Practices Code
- Identified Wildlife Management Strategy
- Expanded Kootenay Region Interim Wildlife Guidelines for Commercial Recreation in British Columbia
- Mineral Exploration Code

2.2 The Kootenay Boundary Higher Level Plan Order

In addition to other existing legislation and policies, the Base Case management regime includes provisions identified in the Kootenay Boundary HLP Order (January 2001). However, it should be emphasized that only certain management objectives and strategies identified in the KBLUP were established as a Higher Level Plan. Although the most recent amendment should be considered as Base Case management, this assessment has assumed the January 2001amendment as current practice to ensure consistency with the Socio-Economic Multiple Accounts Base Case report.

Lastly, it should be emphasized that a Forest Practices Code higher level plan only addresses forest operations and does not affect all of the area or development activities other than forestry within the SRMMP area. Specifically, the HLP states:

Pursuant to Section 3(1) of the FPC Act, the Cranbrook Resource Management Zone was established. Specific objectives and strategies established as a HLP include:

(1) Adopt Biodiversity Emphasis Options (BEOs) as per Table 1 (this document).

(2) Retain mature and old forest retention targets (as per LUPG)

(3) In specific areas only, establish green-up height as 2.5 m in areas adequately restocked and 3.0 m in areas insufficiently stocked. In addition, patch size will be increased.

(4) Retain adequate amounts of mature and/or old forests adjacent to important avalanche tracks to maintain grizzly bear habitat.

(5) To reduce the impacts of forest development on consumptive use streams (human), in areas outside the Enhanced Resource Development Zone – Timber, apply a 30 m Riparian Management Zone to S5 and S6 streams.

(6) Establish specific areas as Enhanced Resource Development Zones – Timber

(7) Using existing targets, maintain mature and/or old forests within identified regional connectivity corridors.

(8) Restore and maintain the ecological integrity of fire-maintained ecosystems

(9) Establish high quality viewscapes as known scenic areas

2.3 Key Environmental Accounts

To compare the Base Case with the SRMMP each environmental account (value) requires a measurable criteria to be used as an **indicator**[2] to assist decision-makers determine if objectives for valued environmental components are likely to be achieved. Environmental accounts and indicators for this assessment reflect regional conservation assessment priorities identified in the KBLUP-IS (1997) as well as the availability of mapped information.

Specific environmental accounts considered in this document include both landscape level coarse filter biodiversity indicators as well as fine filter indicators including:

- Regional Connectivity Corridors - coarse filter
- Seral Stage Distribution (Old Growth) - coarse filter
- Ungulate Winter Range - fine filter
- Grizzly Bear - fine filter

It should be noted that these "indicators" are chosen largely because they reflect the availability of mapped information, which is required to conduct the Multiple Accounts Assessment. However, other key elements of biodiversity are discussed qualitatively in this report including wildlife tree retention, riparian ecosystems, furbearers and fish habitat. It should be emphasized that indicators assessed in this report do not necessarily reflect all of the potential **monitoring indicators** that may be used during biological effectiveness monitoring initiatives (e.g., tracking rare forest type representation, patch size, interior forest conditions).

The MSRM (Victoria/Cranbrook) provided the most recent inventory information for the environmental indicators/accounts used in this report. A composite ungulate winter range map was provided that represented four ungulate species including elk, moose, bighorn sheep and mule deer. No mountain goat winter range information was available for this assessment. In addition, grizzly bear habitat mapping represented the grizzly bear 'priority areas' as identified in the KBLUP. It is our understanding that more detailed habitat mapping (ungulate winter range, grizzly bear) is being used during the SRMMP planning process and will be available for future assessments.

Using a Geographic Information System (GIS), the total amount (hectares) of each mapped environmental account (e.g., ungulate winter range) present in the SRMMP area was identified. These static area summaries were further broken down into four categories including areas potentially available for forest harvesting (THLB), forested areas excluded from logging activities (i.e., "forested exclusions- FE"), non-forested exclusions (NFE), and private land.

2.4 Assumptions

In order to estimate potential impacts to environmental values a number of key *assumptions* were required (Table 2). In addition, assumptions that are more species-specific (fine filter) were necessary and are defined for both ungulate winter range and grizzly bear accounts. These assumptions were derived primarily from the published literature (see references), local knowledge and professional judgement.

---

[2] It is important to differentiate between indicators necessary to conduct the area analysis (i.e., *mapped* or spatial representations of resource values - **assessment indicators**) and those that are *not mapped* but still are critical to maintain environmental quality (e.g., sedimentation rates, concentration of water contaminants (ppm) - **monitoring indicators**). Although this analysis primarily used assessment indicators, other monitoring indicators were also considered if they were explicitly part of current management objectives and strategies.

Table 2. Key assumptions used to estimate potential land use impacts on environmental values.

- *The more closely managed forests resemble natural disturbance regimes[3] (i.e., maintain forest composition and stand structures), the greater the probability that populations of all native species will be maintained.*
- *Consistent with the Biodiversity Guidebook (1995), risks to biodiversity increases along a continuum with increasing intensity levels of resource development. That is, lower intensity development areas provide more options and opportunities for maintaining native species and ecological processes.*
- *Wildlife habitats that occur on private land or the Timber Harvesting Land Base (THLB) are at higher risk than habitats that occur on excluded crown land areas (i.e., inoperable areas) due to loss of unique valley bottom habitats, significantly altered seral stage distributions, road access and increased human disturbance. Although forested areas that occur outside of the THLB contribute to biodiversity, they do not necessarily provide equivalent habitat quality compared to areas that occur within the THLB. Establishment of Old Growth Management Areas (OGMAs), Wildlife Habitat Areas (WHAs) and Wildlife Tree Retention (WTR) on the THLB, however, are assumed to partly reduce the risks for some species.*
- *Overall, landscapes dominated by younger seral forests, simplified stands (reduced forest structure), and smaller patches (i.e., reduced forest interior conditions and increased fragmentation) pose high risks to biodiversity. Similarly, landscapes dominated by young seral grassland communities, pose higher risks to biodiversity than landscapes dominated by climax potential natural communities (grasslands) due to reduced plant and animal species diversity.*
- *More open roads result in increased risks to specific species. In particular, increased road development results in greater mortality risks for large mammals (e.g., grizzly bears and ungulates) and potential habitat loss and fragmentation for smaller species (e.g., amphibians, small mammals). Access management strategies (e.g., access control points etc.), however, are assumed to partly mitigate potential long-term adverse effects of increased road access from forest, mineral or other development.*

Data Limitations

It should be recognized that although our ability to accurately predict the consequences of land use changes on wildlife populations is improving, few ecological studies have been conducted at spatial and temporal scales appropriate for sub-regional conservation assessments (i.e., hundreds of thousands of ha over long time periods). The effect of land use practices on other organisms (e.g. invertebrates, soil biota) is even more uncertain. Overall, there has been relatively few studies that have used empirical data to address the functional relationships between habitat supply, habitat structure and population density, which further limits our predictions of land use change. Ideally, habitat supply models and/or spatially explicit population models (derived from empirical data) would be developed to permit forecasting of temporal and spatial habitat availability under alternative land use scenarios. These alternative land use scenarios could then be ranked according to their relative risk to population viability. The data necessary to use these decision tools, however, were not available for this assessment.

---

[1] "natural" disturbance regime refers to disturbance events pre-European contact.

Despite these limitations, a science-based assessment of the implications of strategic land use practices on wildlife is still possible using a combination of qualitative and quantitative approaches. The relatively high level of knowledge about the habitat requirements and mortality risks of the wildlife species considered here (i.e. grizzly bear, deer, elk, moose,) provides a relatively sound and reliable basis for this assessment, which is intended primarily to identify strengths and weaknesses in current management practices with a view to improving the outlook for environmental values under management direction of the SRMMP.

2.5 Risk Assessment

A relative *risk assessment* approach was used to assess the potential impacts of current management practices on each environmental value using quantitative GIS area summaries in combination with the assumptions outlined in Table 1 as well as the species-specific ones.

Risk is defined as the probability or likelihood of an adverse event occurring over the short or long term. For the purposes of this assessment, an adverse event or outcome includes such things as a decrease in fish or wildlife habitat quantity or quality, increased mortality, altered predator-prey relationships or population decline – adapted from Bergman et al 1993.

Potential causal factors that may result in one or more of these adverse outcomes include timber harvesting, mining, road development and/or increased human disturbance. In general, risks were assumed to be positively correlated with increasing levels of land use intensity to reflect altered future landscape conditions. This approach is consistent with the risks to biodiversity outlined in the *Biodiversity Guidebook* (1995).

Although a baseline benchmark is ideally used to assess risk to biodiversity, (e.g., range of natural variability) these data are not readily available for all effectiveness monitoring indicators. Instead, we have used the Biodiversity Emphasis Option as a static indicator of deviation from natural disturbance patterns. For other values a "low risk benchmark" is used to define the conditions necessary for a particular element of biodiversity to sustain itself. This typically included best management practices that adequately meet the habitat requirements for a particular species and/or comparing attributes found in unmanaged areas to those that occur in managed stands.

Five relative risk levels (Very High, High, Moderate, Low, Very Low) were used and attempted to incorporate the significance of a potential impact by addressing both the likelihood and magnitude of the effect (i.e., management practices) on each environmental value. Where possible, the assessment attempts to determine the significance of impacts and estimated risks by using quantifiable objective information (e.g., GIS area statistics) as well as the available scientific literature, published reports and professional judgment. To determine an initial risk level, how much habitat that occurs on private land and well as the current timber harvesting land base (THLB) was considered. This provided an initial indication of the relative proportion of habitat potentially at risk. However, because some species depend on seasonal habitats that may be concentrated on the timber harvesting land base (e.g., grizzly bears), the THLB can be disproportionately important. As such, a small amount of overlap between habitat and THLB does not necessarily translate into small or low risk. It should also be emphasized that because mineral exploration/development as well road access can affect wildlife habitat that occurs outside the THLB, the gross land area statistics are also useful for determining potential impacts.

The next step included an evaluation of the current management practices in areas where the environmental values occur. The primary consideration or question asked here was "Are the current and/or imminent management practices compatible with maintaining a suitable distribution of habitats across the plan area necessary to maintain viable fish and wildlife populations?" The BEO was used to assess the target seral stage distribution and amount of old growth retained. Although the BEO provides an indication of deviance from natural levels, the amount of non-contributing forest often complicates the interpretation of each assigned emphasis.

To help clarify what the various risk levels mean in terms of implications for ecosystems and wildlife populations, a brief explanation is provided below for each risk level category.[4] It should be noted, that these habitat risk levels were developed and used to assess the environmental implications of the Kootenay Boundary Land Use Plan using the assumptions underlying the principle of natural seral stage distributions outlined in the *Biodiversity Guidebook* (1995). In general, the key assumption maintains that the more deviation from natural seral stage distributions the greater the risk of population decline and extirpation.

- ***Very low risk***: most populations likely to remain stable, or possibly increase where habitat restoration is successful; likely to be multiple areas of each habitat type which will allow habitats to withstand changes due to all but the most catastrophic natural stand-replacing events (e.g. unusually extensive forest fires); where local extirpations occur, connectivity (continuity of habitats) will likely allow for re-establishment of replacement populations.

- ***Low risk***: some populations likely to remain stable, or possibly increase where habitat restoration is successful; some populations dependent on habitats in short supply may decline; likely to be multiple areas of each habitat types which will allow habitats to withstand changes due to most natural stand- replacing events; where local extirpations occur, connectivity may allow for re-establishment of replacement populations.

- ***Moderate risk***: likely to result in reductions in some local populations with others remaining stable; local extirpations are possible where populations are left vulnerable to predators or other increased stress; may be sufficient redundancy in habitats to withstand changes due to most natural stand-replacing events; where extensive areas of young forest are present, these will create imbalances in habitat over time (e.g. 'boom and bust' feeding areas for grizzly bears); re-establishment of locally extirpated populations may be limited by lack of connectivity.

- ***High risk***: likely to result in significant declines in some populations with some local extirpations due to the lack of mature and old forests; The lack of redundancy in habitats will mean that any changes due to natural forest stand replacing events will likely result in further local extirpations; extensive areas of young forests will create imbalances in habitat over time; may contribute to semi-permanent and/or regional extirpations if risk level is long-lasting and/or covers a significant portion of a given population's range.

- ***Very high risk***: major reductions are likely in populations that are dependent on mature and/or old forest stands; many local extirpations; extensive areas of younger trees will create imbalances in habitat over time (e.g., 'boom and bust' feeding areas for grizzly bears); significant potential for contributing to permanent and/or regional extirpations or extinctions if risk level is long-lasting and/or the area at risk covers a significant portion of a given population's range.

Source: Kootenay Boundary Land Use Plan –Environmental Analysis

---

[4] Adapted from: Environmental Risk Assessment (ERA): an approach for assessing and reporting environmental conditions. Ministry of Environment, Lands and Parks (2000) and Salasan, Kutenai Nature Investigations, Dovetail Consulting (1998).

Although this analysis did not explicitly model seral stage distributions, the deviation from natural levels were assumed to be correlated with resource development intensity as outlined in Table 3. It should also be recognized that these risk levels do not explicitly incorporate other risk factors such as increased road access. As mentioned above, management strategies (e.g., access) are used qualitatively to adjust risk ratings to account for other risk factors.

3.0 Overview of SRMMP Area

The plan area encompasses about 754,797 hectares from the B.C.-Montana border, north through the Flathead watershed and portions of the Wigwam, Elk, and Bull River watersheds to the southern boundary of Heights of the Rockies Provincial Park.

The SRMMP area is represented by 4 ecosections including the *Border Ranges* (BRR), *East Kootenay Trench* (EKT), *Crown of the Continent* (COC) and the *Southern Park Ranges* (SPK). Within these ecosections, there are a total of 14 biogeoclimatic subzone variants (Fig 1). The ESSFdk comprises the largest proportion of the plan area followed by the MSdk and together make up the majority of the timber harvesting land base (~81%). The distribution of land ownership indicates that a portion of most subzones also occurs on private land.

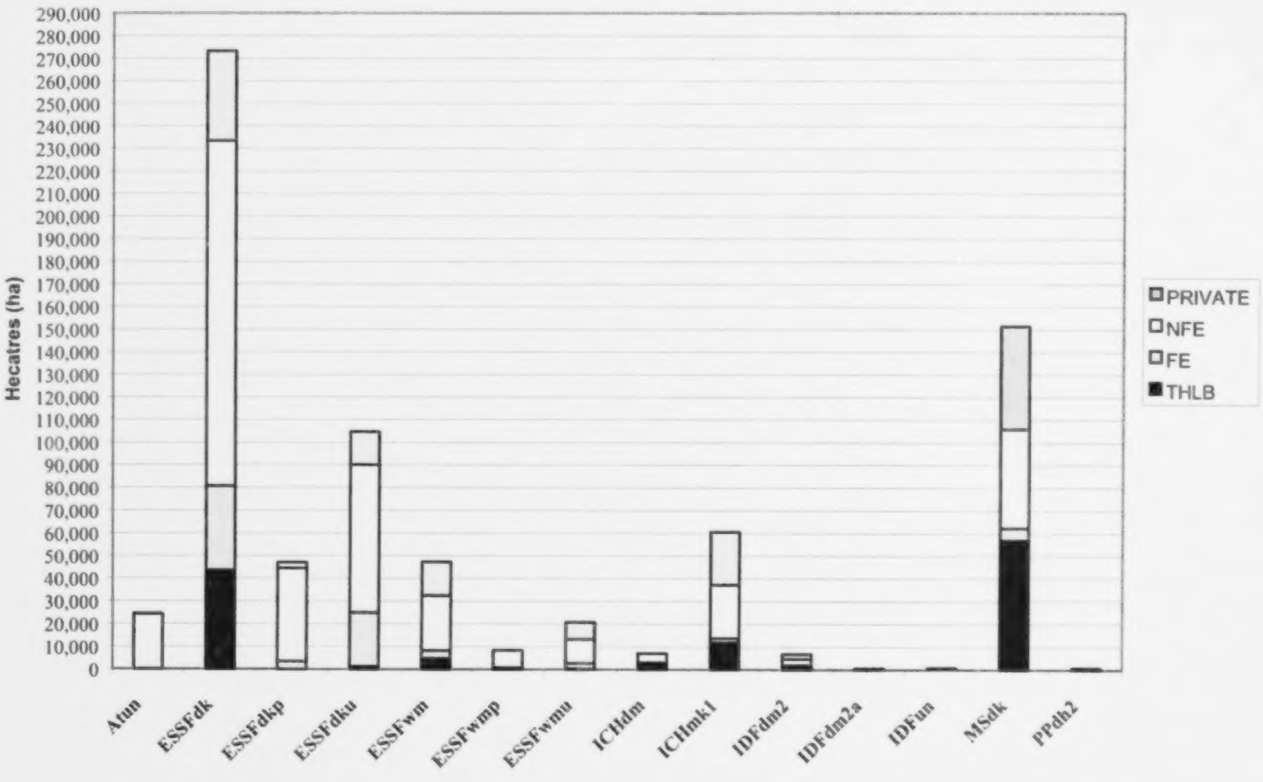


Fig. 1 The amount of land area (ha) represented in the Southern Rocky Mountain Management Plan area (Resource Evaluation Area) by biogeoclimatic subzone and land management categories. NFE = Non-forested exclusion; FE = Forested exclusion; THLB = Timber Harvesting Land Base.

4.70 Biodiversity

Background

Biodiversity is the diversity of plants, animals and other living organisms in all their forms and levels of organization and includes the diversity of genes, species, and ecosystems and the functional and evolutionary processes that link them. Biodiversity can be described at 3 levels: genetic, species and ecosystem. Genetic diversity refers to the different forms (alleles) of genes present in a particular population of living things. In a genetically diverse population, many forms of a gene are present, and because of this the population has the capability of adapting rapidly when local conditions change. A population that is not genetically diverse (e.g. an inbred or isolated population) has only a few forms of each gene, making it vulnerable to genetic diseases and less able to adapt to environmental changes.

Species diversity refers to the number of different living species in a particular area. When species become extinct, species diversity diminishes. Each species has its own particular set of environmental conditions under which it can live and breed, and chooses its habitat accordingly. Species diversity is dependent on the number of different habitats present. Species diversity within the SRMMP area is highest in lower elevation habitats represented by the PP, IDF and ICH biogeoclimatic subzones (Fig. 2). Although the MSdk and ESSFdk support relatively fewer species than valley bottom subzones, between 175-230 vertebrate species potentially occur in these two subzones, which dominate the plan area.

Ecosystem diversity refers to the number of different habitats available in a particular ecosystem, and is directly reflected in species diversity. Human activities tend to split, isolate or eliminate certain types of habitat while maximizing others. Conserving ecosystem diversity means maintaining all of the habitats naturally occurring in an area in sufficient quantities that allow the survival of all species associated with those habitats.

Maintenance of biodiversity is dependent on:
- Protecting and connecting large areas as ecological benchmarks at the regional level;
- Providing habitat variety and connectivity at the landscape (watershed) level; and
- Managing at the stand (site) level.

Biodiversity is threatened by loss of habitat due to fragmentation, alienation or degradation by industrial practices or by urban encroachment, and /or by more direct impacts on specific plant and animal species such as consumptive use by people or animals. In general, to maintain biodiversity, current scientific theory states that different structural stages should be maintained in the landscape in proportions, which allow the maintenance of wildlife populations dependent on each stage, and in proportions, which mimic the natural disturbance interval of the forest type.

4.1 Natural Disturbance Types

The SRMMP area is represented by four natural disturbance types (NDTs) including NDTs 2, 3, 4 and 5. NDT 3 comprises the majority of the gross plan area (66%) with the remaining area represented by NDT 5 (27%), NDT 2 (6%) and NDT 4 (1.2%) (Fig. 3). As a proportion of the timber harvesting land base (THLB), NDT 3 comprises almost all of the operable forest (93%). Of this, two biogeoclimatic subzones dominate the THLB including the MSdk (46.1%) and ESSFdk (35.3%).

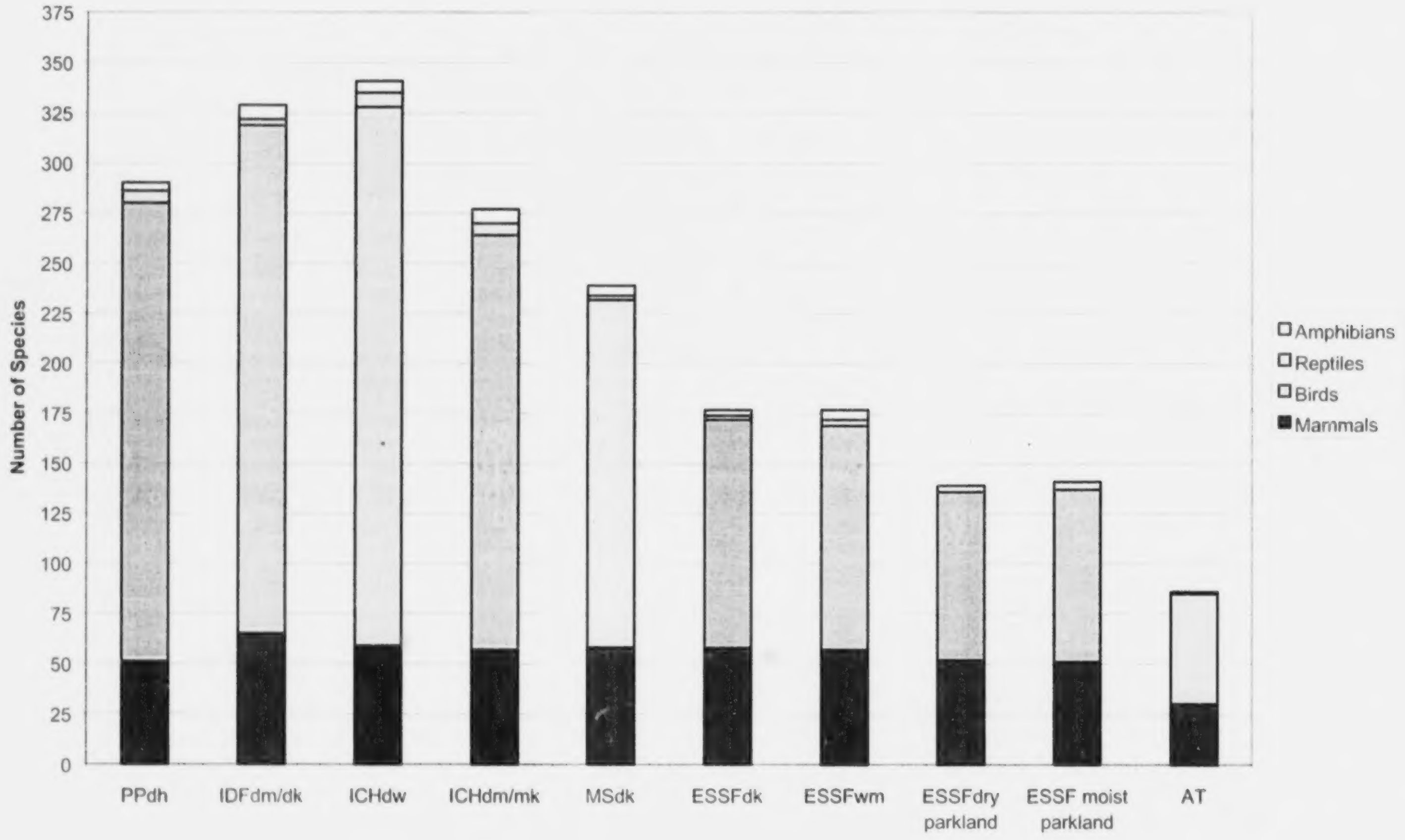


Figure 2. Species diversity by biogeoclimatic subzone. SRMMP. Source. Wildlife Diversity in British Columbia (1995).

Natural Disturbance Type 5 includes alpine tundra and subalpine parkland ecosystems (ESSFdkp, ESSdku, ESSFdmp, ESSFdmu, ESSFmwp, ESSFwmu). These are areas with short, harsh, growing seasons where fires or other types of disturbance such as grazing have dramatic and long-lasting effects.

Natural Disturbance Type 4 includes the, IDFdm and PPdh subzones, which are characterized by frequent stand-maintaining fires. Low-intensity fires are common and limit tree encroachment onto grasslands. Patches of fire-resistant trees occur throughout the IDF and PP in slightly moister areas, resulting in a natural mosaic of mostly uneven-aged forests interspersed with grassy and shrubby openings.

Natural Disturbance Type 3 is characterized by ecosystems with frequent stand-initiating fires and outbreaks of insect pests. These forests occur naturally in a mosaic of even-aged regenerating stands, usually containing mature forest remnants. Biogeoclimatic subzones represented by NDT 3 include the ESSFdk, MSdk, ICHdm, ICHdw, and ICHmk1.

Natural Disturbance Type 2 is characterized by ecosystems with infrequent stand-initiating events and includes the ESSFmw and ESSFdm subzones. Historically these ecosystems naturally experienced infrequent fires (B.C. Ministry of Forests 1995). The landscape naturally consisted of even-aged stands with snags and veteran trees remaining from previous burns.

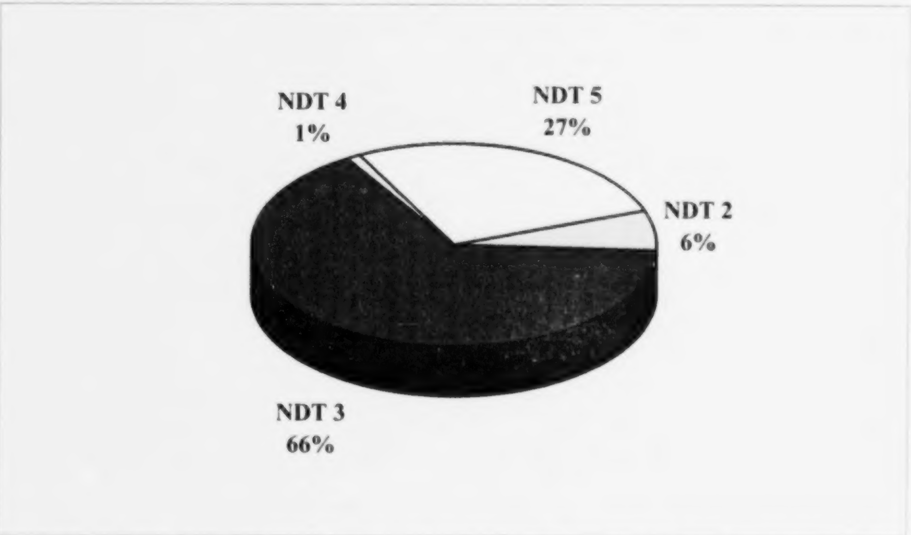


Figure 3. Proportion of each natural disturbance type (NDT) in the SRRMP area.

The implication for forest management of the relatively large proportion of the THLB that is represented by NDT 3 (total 66% of plan area) lies mainly with the harvesting patterns, seral stage distribution, patch size and degree of connectivity maintained in managed landscapes. A clustered harvest pattern with aggregated harvest units or retention of mature timber patches within aggregated harvest unit's mimics most closely the natural disturbance of fire and insect outbreaks in the NDT 3 subzones. To mimic the natural small-scale disturbances that naturally occur in NDT 2, harvesting patterns should be small (< 250 ha) and dispersed over the landscape.

5.0 Seral Stage Distribution and Old Growth

Background

Old-growth conservation is a concern because forest management emphasizes production of young, fast-growing even-aged forests with limited structural diversity and few large old trees. Old-growth forests provide structural components such as large old trees, multi-layered canopies, standing dead trees, decaying live trees, large logs on the forest floor (coarse woody debris) and in streams (large organic debris) and considerable amounts of arboreal lichens, all of which are less abundant in young forests and are important to many wildlife species (Pojar and Meidinger 1991).

As forest stands develop through time, the composition of plant and animal communities change. Some species are primarily associated with mature and old forests, while others use predominately early seral stages. Many plants and animals, however, use different seral stages throughout the year to meet seasonal requirements. To maintain biodiversity, the FPC *Biodiversity Guidebook* outlines seral stage objectives based on natural disturbance types (NDTs). Natural disturbances (e.g. fire, wind and insects) and their frequency have created forests with differing seral stage distributions. In general, forests with less frequent disturbances (e.g. ESSFmw) tend to be older than those that are disturbed more frequently (e.g., MSdk). Consequently, the types and numbers of plant and animal species adapted to each of these forest types vary. In general, species diversity tends to be greater in more productive valley bottom habitats (see Fig 2).

One of the primary threats to biodiversity is fragmentation of mature and old forests caused by forest harvesting practices and road development. Fragmentation is the process of reducing large contiguous forests into smaller forest patches and varies directly with the rate and pattern of timber harvesting. Fragmentation of old growth stands reduces the quality of wildlife habitats for several reasons including:

- ☐ the edges of old growth stands are poorer quality due to increased disturbance and climatic extremes;
- ☐ small stands are not suitable for species that require larger home ranges; and,
- ☐ animals moving between widely spaced old growth habitat may be subjected to higher rates of mortality.

For these reasons, the long-term viability of populations of some species may be lower in landscapes where their habitat is highly fragmented. Therefore, it is becoming widely recognized that forest management practices must be modified to better integrate timber harvesting and silviculture with ecological values. To achieve these objectives, especially for forests that are naturally disturbed relatively infrequently (i.e., NDTs 1& 2), will require increased use of selection harvesting systems designed to retain old growth attributes.

Current Status and Anticipated Trends

The provincial landscape unit planning process is undergoing changes, however, the general framework and priority initiatives identified in the Landscape Unit Planning Guide (1999) are anticipated to remain under the emerging guidelines for *Sustainable Resource Management Planning* as well as the results-based Forest Practices Code. As such, one of the primary elements of biodiversity planning identified in the LUPG is to establish objectives for old growth retention. Although the process of identifying old growth management areas (OGMAs) may have occurred in the absence of the SRMMP, the spatial establishment of OGMAs is also partly guided by the SRMMP, which confounds impacts attributable to either management regime. Nonetheless, a brief description of the existing seral stage distribution including old growth for the SRMMP area is provided below.

The SRMMP area contains a total crown forested land base (CFLB) of 310,405 ha. Of that, 123,495 hectares occurs on the current timber harvesting land base (THLB) and the remaining amount (186, 910 ha) is classified as non-contributing forested land. The THLB is distributed over 11 of 14 biogeoclimatic subzone variants, however, 90% of the THLB is represented by three subzones including the MSdk, ESSFdk and the ICHmk1 (Table 3).

Table 3. Total area (ha) of each biogeoclimatic subzone/variant in the SRMMP area by land base category.

Biogeoclimatic subzone/variant	Total THLB (ha)	Total non-contributing (ha)	Total crown forested land (ha)	% of total THLB
ESSFdk	43,552	100,168	143,721	35.3
ESSFdkp	0	514	514	0.0
ESSFdku	1,126	15,449	16,575	0.9
ESSFwm	4,732	13,950	18,682	3.8
ESSFwmp	0	396	396	0.0
ESSFwmu	395	2,831	3,226	0.3
ICHdm	2,927	2,670	5,597	2.4
ICHmk1	11,891	19,058	30,949	9.6
IDFdm2	1,563	755	2,318	1.3
IDFdm2a	98	198	296	0.1
IDFun	0	25	25	0.0
MSdk	56,933	30,867	87,800	46.1
NODATA	22	13	34	0.0
PPdh2	258	15	273	0.2
TOTAL	**123,495**	**186,910**	**310,406**	**100.0**

Source: SRMMP database (Cranbrook)

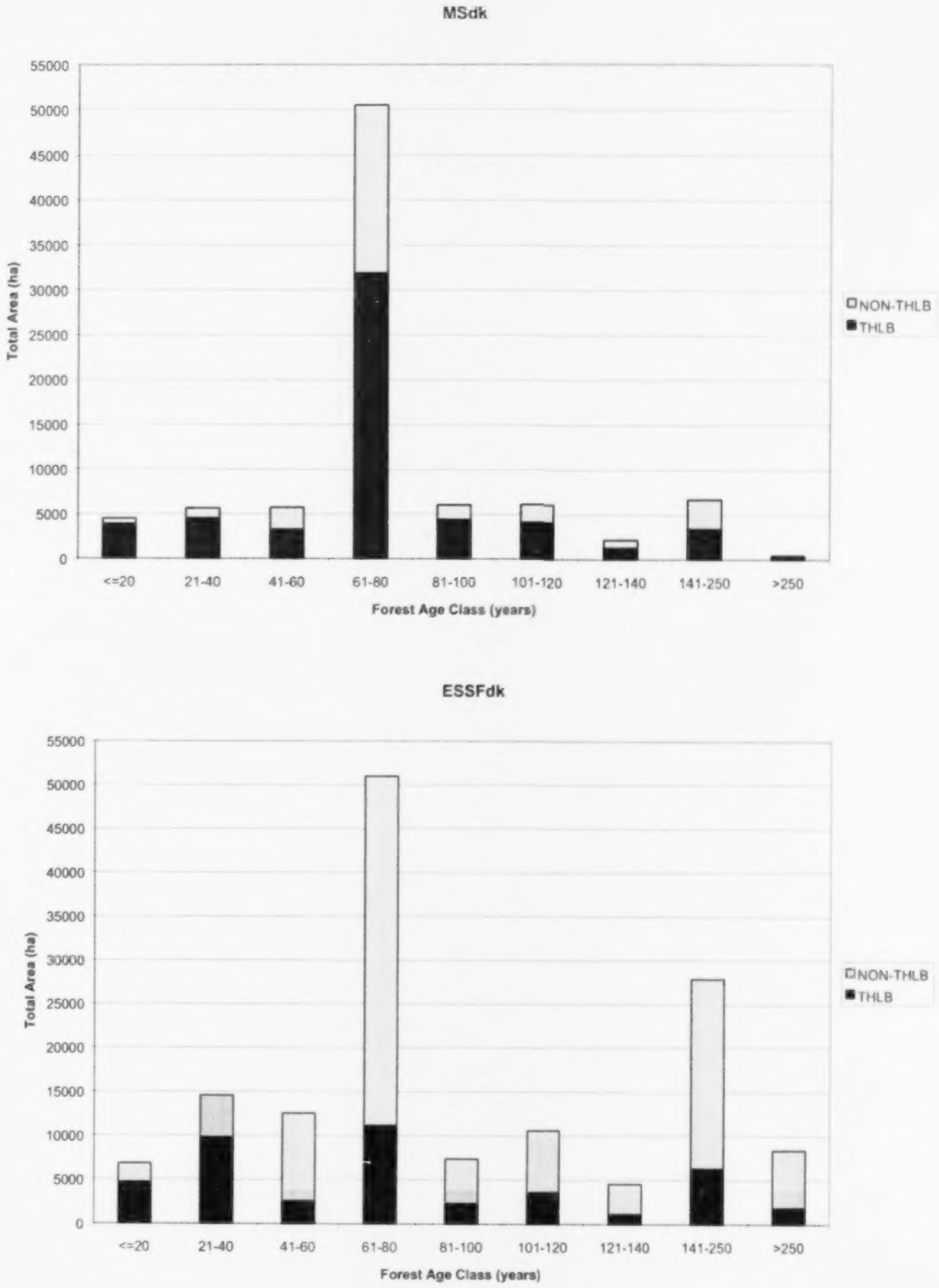


Figure 4. Current age class distributions of the MSdk and ESSFdk by timber harvesting land base (THLB) and forested areas outside the THLB – Southern Rocky Mountains Management Plan area.

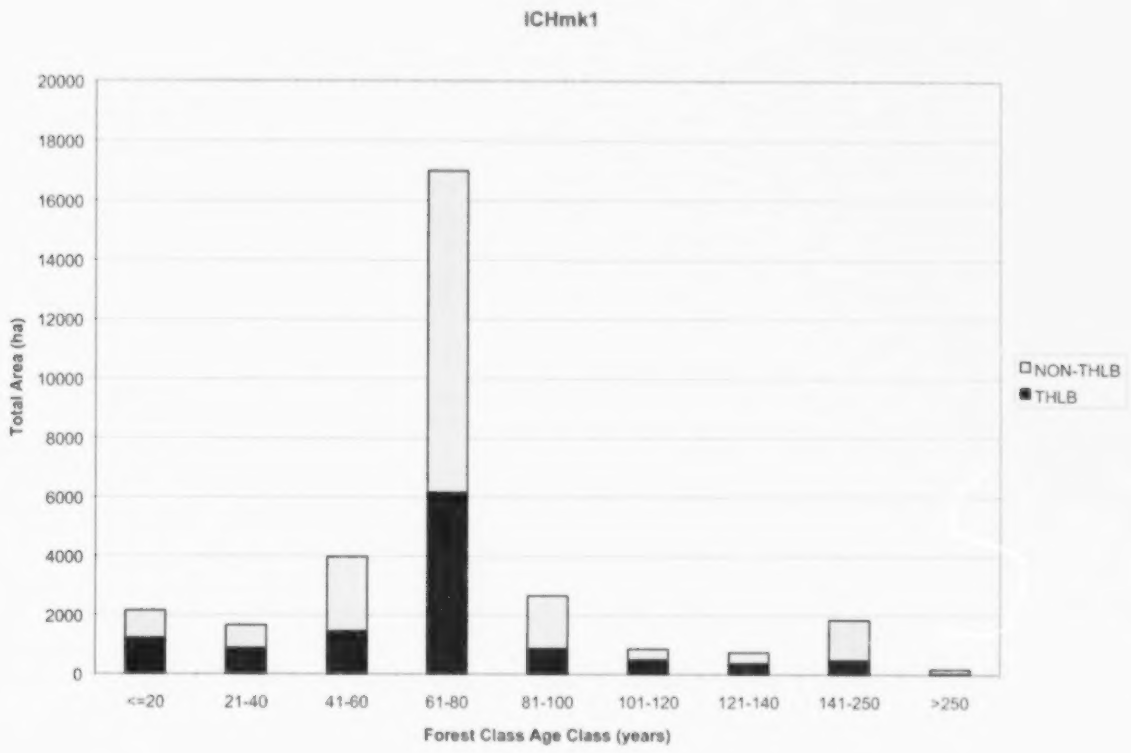


Figure 5. Current age class distribution of the ICHmk1 by timber harvesting land base (THLB) and forested areas outside the THLB – Southern Rocky Mountains Management Plan area.

The current age class distributions of the MSdk, ESSFdk and ICKmk1 are similar with most of the timber harvesting land base currently less than 80 years old, with many stands in the 61-80 year old age class (Figs 4 &5). This pattern also appears to be generally consistent in areas outside the timber harvesting land base. There are relatively few mature or old forest stands currently present in the MSdk and ICHmk1, however, there are greater amounts of mature and old forest in present in the ESSFdk non-contributing areas (Fig. 4).

In general, the long term risk to mature and old forest can be partly determined by examining the assigned Biodiversity Emphasis Options (BEO) for each Landscape Unit/BEC combination in the SRMMP area. Although this report could not address the relative abundance of mature and old forest over time, the previous analysis of the KBLUP-IS (1996) did provide an estimation of risk based on assigned BEOs and the deviation of seral stage distribution from natural levels over discrete time periods (0,20,70 and 250 years). Reviewing the landscape units that are contained in the SRMMP area indicated that over the short-term (next 20 years), valley bottoms habitats, particularly those that occur in the West Flathead, Wigwam, Lower Elk, West Elk, Upper Elk and Fording River Landscape Units are at high risk to very high risk. Over the mid to long term, risks decline to moderate-low levels in the Flathead and Wigwam but remain high throughout the Elk valley.

The current analysis indicates 79.4%, 18.5% and 2.1% of the total crown forested land base (CFLB) will be managed to meet Intermediate, High and Low biodiversity age class objectives respectively. As a proportion of the timber harvesting land base, less area will be managed to meet High Biodiversity age class objectives (10.9%) with slightly more forested land managed to meet Intermediate age class objectives (86.2%; Fig. 6).

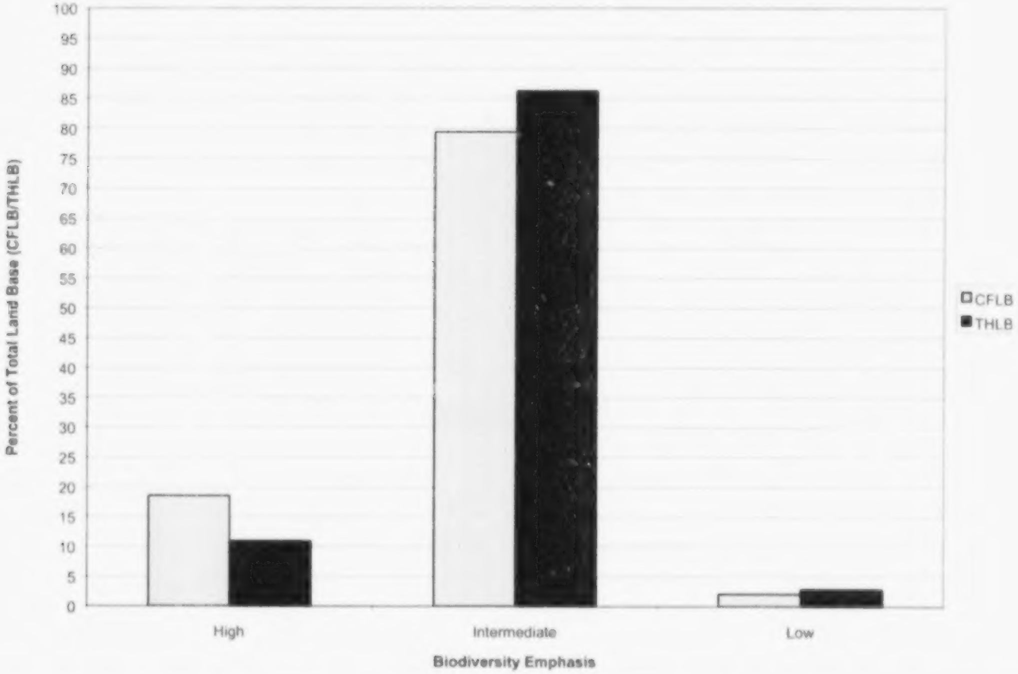


Figure 6. Proportion of crown forest land base (CFLB = 310,405 ha) and timber harvesting land base (THLB = 123,495 ha) managed to meet each Biodiversity Emphasis Option (BEO) – Southern Rocky Mountains Plan Area

The relatively large amount of Intermediate BEO assigned to most Landscape Unit/BEC combinations suggests "moderate to high" risk levels to coarse filter biodiversity elements (assuming 50% of natural quantities of mature and old forest are retained). In the short term, higher levels of risk are likely in Landscape Units where there is an existing deficit of mature and old forest. Depending on the BEO, risks to mature and old forest could decline overtime as mature and old forest are recruited and captured in OGMAs. Over the longer term, higher risk levels may become apparent in landscape units designated as Low BEO (i.e., <50% of natural mature and old retained).

Overall, the rate and extent of forest harvesting as well as specific management strategies (e.g., silvicultural systems, ecosystem-based management) will largely determine the extent to which old growth ecosystems will be maintained on the THLB. Although some mature and old forests will remain on the THLB to meet VQO objectives as well as other FPC requirements (e.g., *Riparian Reserve Zones*, *Wildlife Tree Patches*), there will be fewer large areas of mature and old forest present in valley bottom forests. While the Forest Practices Code requires stand level biodiversity practices (e.g. wildlife tree patches) as well as retention of timber in riparian reserve zones, species dependent on large areas of mature and old forests will be most affected in the short term.

In order to reduce the risk to old growth, Old Growth Management Areas (OGMAs) need to be established that capture representative ecosystems including rare habitat types and/or areas with high wildlife values. In the absence of the SRMMP (i.e., Base Case) there will be fewer opportunities to identify appropriate areas, which will increase the risk that some high value old and mature forests may be harvested.

Ecosystem Representation and Rare Forest Types

No information is available at this time.

6.0 Wildlife Tree Retention

Background

As part of current government policy, the *Landscape Unit Planning Guide* (LUPG 1999) has identified wildlife tree retention as one of the priority stand-level management objectives to be implemented. A wildlife tree is any standing live or dead tree with special characteristics that provide valuable habitat for conservation or enhancement of wildlife (BGB 1995). In British Columbia, over 80 species of wildlife are dependent on wildlife trees to meet some aspect of their habitat requirements (feeding, denning, nesting).

The *Biodiversity Guidebook* provides suggested levels of wildlife tree retention based on biogeoclimatic subzone, total area available for harvest and the amount of area previously harvested without wildlife tree retention. In general, the LUPG (1999) adopted the wildlife tree retention targets in the *Biodiversity Guidebook* and together with the *Provincial Wildlife Tree Policy and Management Recommendations* are the main documents that guide current management practices related to wildlife tree retention. The LUPG also outlined timber supply modelling assumptions that indicated a portion of wildlife tree retention should come from constrained areas within the block, such as riparian reserve zones. The *Provincial Wildlife Tree Policy and Management Recommendations* provides guidance on the choice of appropriate wildlife trees and wildlife tree patches, and related best management practices (MOF 2000).

Current Status and Anticipated Trend

A recent provincial review indicated many cutblocks in the province including those in the Kootenays[5] are retaining some trees with moderate to high wildlife values, however, the total number of trees retained is generally low (<3 stems per ha), particularly the number of dead trees (MOF 2002). This is consistent with Steeger (2002) who reported wildlife tree retention levels in managed stands may be as low as 0.1-1snags/ha compared to 10-60 snags/ha in unmanaged stands. This suggests the supply of potential cavity nesting trees is declining and those species dependent on high value wildlife trees remain vulnerable under current management practices.

---

[5] Wildlife tree retention surveys were conducted in the Arrow and Kootenay Lake Forest Districts

Although inoperable areas can contribute to the supply of wildlife trees over time, species dependent on existing wildlife trees on the THLB will remain at high risk, especially over the short term as the amount of mature and old forest declines. Improving the composition of wildlife tree patches and the establishment of OGMAs have the potential to partly reduce the risks to wildlife tree users as well as adhering to the ecological guiding principles outlined in the *Provincial Wildlife Tree Policy and Management Recommendations.*

7.0 Riparian Ecosystems

Background

Riparian habitats occur adjacent to water bodies including streams, rivers, lakes and wetlands. Riparian vegetation (trees/shrubs) provides an unusually large number of functions including the regulation of light and temperature regimes, nourishment for aquatic and terrestrial biota and act as a source of large organic debris. In addition, riparian areas regulate the flow of water and nutrients from uplands to streams and maintain biodiversity by supporting numerous ecosystem types and ecological processes. Species diversity tends to be very high in riparian areas because of the multiple vegetation layers that provide a variety of nesting sites, cover areas and food sources. Maintaining riparian corridors is essential in managed forests because they help maintain fundamental ecosystem processes including species dispersal, predator-prey relationships and hydrological functions. Some of the key riparian floodplain ecosystems in the plan area include the Flathead River, Wigwam and Elk Rivers

Current Status and Anticipated Trends

The *Forest Practices Code* (FPC) as well as the *Mineral Exploration Code* (MX Code) requires *Riparian Reserve Zones* around specific stream classes and water bodies. Depending on the stream classification (stream width), FPC reserve zones (i.e., no-harvest buffers) vary between 0-50 m. Although S3, S2 and S1 streams require 20,30 and 50m buffers respectively, no reserve zones are required for S4-S6 streams. Because some fish may be present in S4 streams, these headwater streams remain vulnerable to resource development practices. Overall, however, the FPC riparian reserve zones reduce the risks to S1, S2 and S3 stream classes and help maintain some riparian values (e.g., fish habitat, water quality).

Range management in riparian areas is currently guided by the FPC Riparian Management guidebook, which provides recommendations for "Best Management Practices". Riparian values must be addressed in all current range use plans. In the plan area, all range use plans address riparian values using the FPC guidebook.

The GIS summary indicated there are approximately 48,919 ha of riparian reserve and management zones identified in the SRMMP area (Table 4). The majority of riparian habitat has either been netted out of the THLB (35,406 ha) or occurs in inoperable areas leaving a total of 3,417 ha (~7% of total) on the THLB within Riparian Management Zones. It is worth noting that a relatively large amount of riparian habitat occurs on private land (10,096 ha or 20.6%).

Table 4. Area summary (ha) of riparian zone classes by land base category.

Riparian Zone	FE	NFE	PRIVATE	THLB	Total
Lake Management	650	1,138	333	277	2,398
Lake Reserve	22	44	13	0	79
Stream Management	2,635	20,528	6,161	2,406	31,729
Stream Reserve	989	8,768	3,371	0	13,129
Wetland Management	183	295	209	734	1,421
Wetland Reserve	24	130	9	0	163
Total hectares	**4,502**	**30,904**	**10,096**	**3,417**	**48,919**

FE = forested exclusions; NFE = non-forested exclusions: private = private land; THLB = timber harvesting land base.

In general, implementation of management practices outlined in the FPC *Riparian Management Area* and *Lake Classification and Lakeshore Management Guidebooks* suggests a significantly reduced impact on riparian habitats. Although the outlook is generally positive for hydrological processes as well as some plant and animal species (fish) dependent on riparian communities, the degree to which these potential benefits are realized is highly dependent on harvesting practices in the *Riparian Management Zone*. That is, maintaining mature and old forest attributes (e.g. wildlife trees) in areas outside the *Riparian Reserve Zone* will further reduce the impacts to riparian communities and processes. The HLPO (Objective 6), which requires a 30 m *Riparian Management Zone* will partly reduce the risks to riparian areas for S5 and S6 streams used for consumptive uses. However, the extent to which this provision applies to the SRMMP area is not clear at this time. Overall, the benefits of leaving narrow (20-50 m) riparian buffer zones to terrestrial wildlife will have less of a positive impact and may even be detrimental to some species (e.g., increased predation). A landscape-level approach is needed to provide better riparian corridor protection that encompasses headwater streams as well as floodplains downstream to maintain hydrologic connectivity and biodiversity.

8.0 Connectivity

Background

Landscape connectivity refers to habitat linkages that allow organisms to move and disperse through a landscape. Landscape connectivity depends on the degree of habitat fragmentation and the habitat affinities of the species and their ability to move across the landscape and effectively utilize spatially distributed resources (e.g., food, mates). The importance of landscape connectivity to ecosystems processes suggests that management strategies that emphasize dispersal rates should help maximize the benefit of conservation efforts. Overall, providing effective connectivity corridors is considered a key landscape element to maintain ecological processes. The difficulty, however, is defining connectivity in meaningful terms that can applied operationally.

Current Status and Anticipated Trends

The SRMMP area comprises a relatively intact ecosystem that links the Canada-USA border through the Flathead and Elk River watersheds. Connectivity corridors were identified by the KBLUP at a regional and sub-regional scale and provide guidelines for managing resource activity within these areas. These corridors are designed to link the Protected Areas and Special Resource Management Zones in order to ensure that opportunities for movement of species and the associated genetic material can be maintained over time (KBLUP-IS 1997). Maintaining regional connectivity corridors in the SRMMP area is crucial to the long-term persistence of many wildlife populations, especially grizzly bears.

The GIS area summary indicated there are approximately 375,862 ha of proposed connectivity corridors identified in the SRRMP area. Of that, about 72,904 ha occurs on the THLB (19.4%), which is at potential risk from forest harvesting activities and further road development. Another 45,339 hectares (12%) occurs on private land and is also considered vulnerable to further settlement and resource development.

The connectivity corridors overlap a portion of each Landscape Unit in the plan area; however, the connectivity corridors are concentrated in the East Flathead, Upper Flathead, Wigwam, Sand Creek, Iron-Sulfur, and East Elk Landscape Units. The connectivity corridors are represented largely by the MSdk, ICHmk1, and ESSFdk biogeoclimatic subzones and will be managed predominately within the seral stage constraints of an Intermediate BEO (Table 5).

Table 5. Areal breakdown (ha) of connectivity corridors by biogeoclimatic subzone and Biodiversity Emphasis Option (BEO) – SRMMP area

BECLABEL	BEO - High	BEO – Inter	BEO - Low	Total THLB (ha)	Total Non-THLB (ha)	Total CFLB (ha)
ESSFdk	3288	17971	0	21259	57102	78361
ESSFdkp	0	0		0	284	284
ESSFdku	12	413	0	425	8382	8807
ESSFwm	80	2053		2133	8584	10717
ESSFwmp	0	0		0	64	64
ESSFwmu	0	193		193	861	1054
ICHdm		1796		1796	1564	3360
ICHmk1	1427	6780		8207	11729	19936
IDFdm2	96	0	1354	1449	423	1872
IDFdm2a		39		39	64	103
MSdk	6033	31028	84	37145	18580	55725
NODATA	0	0		0	0	0
PPdh2			258	258	15	273
TOTAL	**10937**	**60272**	**1695**	**72904**	**107651**	**180556**

Source: SRMMP Database: THLB = Timber Harvesting Land Base; CFLB = Crown Forested Land Base.

The Kootenay-Boundary HLP Order states that connectivity corridor objectives will be addressed using the mature and old forest seral target budgets available within each BEO/NDT combination. The current age class distribution of the connectivity corridors indicates all forest age classes are represented to some extent, however, about half (~76,805 ha) of the total amount of connectivity corridor is dominated by young and mid seral forests (61-80 years)(Fig. 6). Whether there is adequate mature and old forest to meet the connectivity corridor objectives is not clear at this time. Overall, the matrix of crown and private lands in the SRMMP area poses significant challenges to maintaining regional connectivity. As such the risks to species dependent on connectivity corridors remains high in the Elk Valley with somewhat lower risks (moderate) in the remaining SRMMP area.

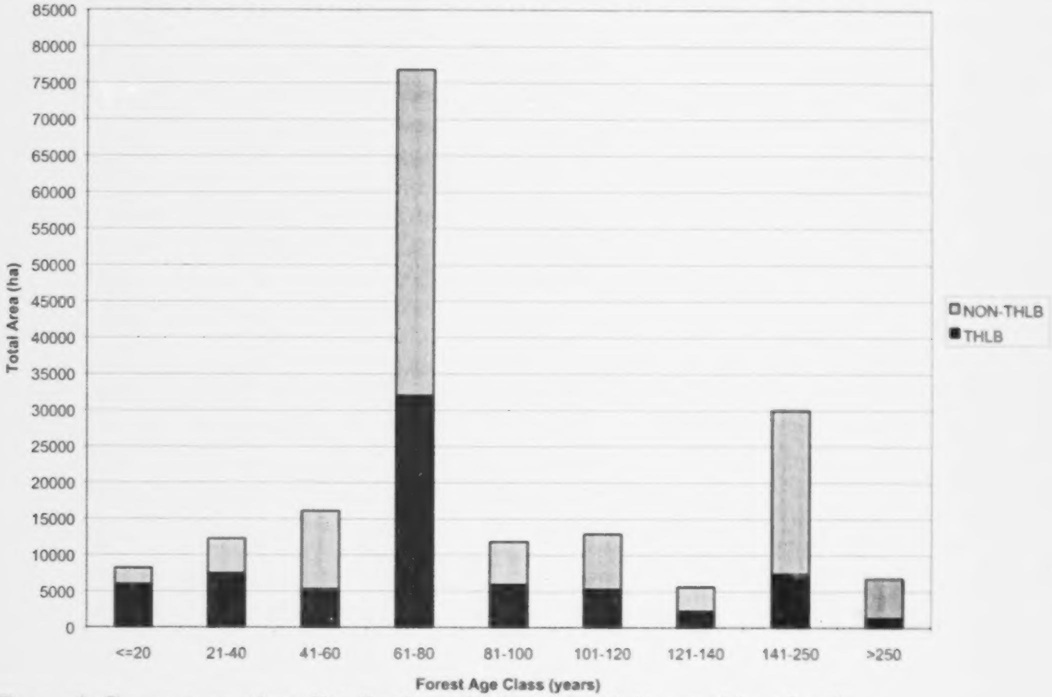


Figure 6. Current age class distribution within connectivity corridors for the timber harvesting land base (THLB) and forested areas outside the THLB. SRMMP

9.0 Ungulate Winter Range

Background and Assumptions

The SRMMP plan area supports a high diversity of ungulate species including white-tailed deer, mule deer, bighorn sheep, elk, moose and mountain goat. To maintain ungulate winter range at both stand and landscape levels, habitat attributes including preferred forage species, snow interception as well as thermal/security cover need to be appropriately distributed over space and time. This requires not only maintaining mature forest cover but also preventing forest in-growth of grassland and open forest communities for ungulates dependent on grazing habitats (e.g., elk, bighorn sheep). In addition, road access as well as commercial and non-commercial recreation activities (e.g., heli-skiing, snowmobiling, ATV) has the potential to adversely affect ungulate populations. Increased road access and human disturbance have the potential to increase physiological stress, habitat displacement and mortality risk (i.e., legal and illegal hunting pressures).

The Ministry of Water, Land and Air Protection (WLAP) is charged with identifying and establishing Ungulate Winter Ranges under the *Forest Practices Code* (FPC). Recent amendments to the *Operational Planning Regulation* (OPR) of the FPC have created a specific definition and regulations to provide the legal basis for management of Ungulate Winter Ranges (UWR) on provincial forest land. A two-step process was approved for the establishment of UWR under the Regulation. Grandparenting of existing mapped winter ranges that had wildlife management plans and/or strategies, and were managed as UWR, was completed on October 15, 1998. The remaining candidate winter ranges include:

1) those that were previously mapped but not grandparented by October 15, 1998, and
2) those that were accounted for in TSR 1 but were not mapped.

All *Forest Practices Code* candidate and grandparented ungulate winter ranges are to be finalized as quickly as possible, and those meeting the conditions of the MOU confirmed by October 15, 2003. The overall intent is to: (1) identify the areas that are necessary for the winter survival of ungulates; (2) ensure that these areas are distributed in the most effective way for maintaining ungulates across their natural range; and (3) ensure that timber supply impacts do not exceed those included in Timber Supply Review I (TSR I). Although ungulate winter range is part of the SRMMP planning process, the establishment of UWRs is largely considered to be a Base Case management regime (i.e., UWRs would likely be established in the absence of the SRMMP).

Current Status and Anticipated Trends

Approximately 141,510 ha of ungulate winter range have been identified in the SRMMP area. Of that, a substantial proportion (33% or 47,377 ha) occurs on private land and remains vulnerable to development activities (e.g., mining, agriculture, human settlement). About 28% of the remaining ungulate winter range occurs on the timber harvesting land base (28%) and is considered at risk from forest harvesting activities. The remaining ungulate winter range (38.5%) overlaps areas outside the operable forest (Table 6).

Table 6. Areal breakdown (ha) of Ungulate Winter Range by land base category

SRMMP Land Category	Area (ha)	Percent of total
Timber harvesting land base (THLB)	39,635	28.0
Forested exclusions	7,442	5.3
Non-forested exclusions	47,056	33.2
Private Land	47,377	33.5
TOTAL	**141,510**	**100**

FE = forested exclusions; NFE = non-forested exclusions: private = private land; THLB = timber harvesting land base.

The KBLUP-IS (1997) and the *Timber Supply Review* (1999) recognized 4 types of Ungulate Winter Range grouped by landscape unit and biogeoclimatic unit. Different forest cover requirements have been applied according to ungulate winter range type and species present. Depending on winter range type, the management objectives stated that 30-50% of the ungulate winter range must be greater than 80 or 120 years old at any one time[6]. Although these forest cover constraints appear adequate to maintain thermal cover (low-moderate risk), ungulate winter range on private lands remains at higher risk.

The Columbia Basin Fish and Wildlife Compensation Projects also help to reduce the risks to ungulates by restoring native grassland foraging habitats through the development of Stand Management Prescriptions (SMP), Burn Plans, Pre-Burn Slashing and Prescribed Burning. Management objectives in place for the *Fire Maintained Ecosystem Restoration Program*

---

[6] Ungulate Winter Range Mapping has recently been refined using Predictive Ecosystem Mapping. Proposed management objectives will reflect an ecosystem-based approach compared to a species-based approach.

(NDT4; open forest, open range) are also viewed as positive measures designed to maintain an adequate supply of grazing habitat. In addition, the interim commercial recreation guidelines as well as a number of *Access Management Areas* help reduce the risks associated with increased human disturbance and legal/illegal hunting pressures including:

- Wigwam Flats-Mt Broadwood/Sportsman Ridge Access Management Area (MU4-2). Closed year round to the operation of all vehicles
- McDougal Wildlife Sanctuary at Sage Creek (MU4-1) No hunting, trapping, firearms or vehicles
- Galton Range Access management Area (MU4-2)-
- Chauncy Todhunter – closed year round to all vehicles
- Weigert Creek Access – closed all year to all vehicles except snowmobiles.
- Upper Elk Valley-Fording River Access Management Area - closed all year to all vehicles except snowmobiles.
- Ridgemount Access Management Area
- Alexander Creek
- Corbin Creek Access Management Area

Overall, current management practices including the establishment of UWRs are viewed as positive because it provides increased certainty that ungulate winter range objectives will be met. However, the total area established as UWR under the FPC is limited by timber supply impacts, which often results in fewer areas established than desired. In summary, current management practices suggest low to moderate risks to ungulate populations. However, refining access and recreation management zones with effective management objectives and strategies would further reduce the risks to ungulate populations over the long term.

A brief summary of ungulate population status in the SRMMP area is provided below:

- According to WLAP staff, white-tailed deer and mule deer populations are stable to slightly increasing in the plan area (B. Forbes *pers.comm*)
- Mountain goats in Management Unit 4-23 are stable (B.Forbes *pers.comm*).
- Bighorn sheep herds are stable in the Bull River and Lizard (Elko), increasing in the Elk Valley but decreasing in the Wigwam (Teske and Forbes 2002). Disease (pneumonia), harsh winters and predation have apparently contributed to the decreasing trend.
- Following two harsh winters, recent survey area estimates suggest elk populations have increased since 1995-1996 (B.Forbes *pers.comm*), especially in MU-4-23 and 4-2.

10.0 Grizzly Bear

Background and Assumptions

Grizzly bears are provincially *blue-listed*[7] primarily because they require large wilderness areas, have low reproductive rates and are vulnerable to human disturbances. To reduce bear-human conflicts, it is generally accepted that grizzly bears require large relatively undisturbed areas (home range sizes ~ 350-2500 km^2). However, because large undisturbed areas exceeding thousands of square kilometres are rare, the majority of grizzly bear range will require some form of special management to ensure grizzly bear survival.

---

[7] BC Environment uses a 3 class system to rank vertebrate species according to their provincial degree of endangerment. *red-list* = endangered; *blue-list*-vulnerable/sensitive; *yellow-list* = not at risk, but may be regionally significant

Grizzly bears require a variety of seral stages to meet seasonal habitat requirements. Important spring habitats for grizzly bears in the East Kootenays include riparian areas, floodplain forests, and avalanche chutes. In addition, open timbered burns that provide abundant berry-producing shrubs (e.g. soopolallie, huckleberries) are used extensively as foraging areas throughout the summer months.

Most of the potential threats to grizzly bear populations are related to human access, which results in higher mortality rates. Because road access poses high risks to grizzly bear survival, the amount of land remaining unroaded or where road densities are minimized typically provides the least risk to grizzly bears. Although grizzly bears have been shown to tolerate moderate rates of resource development (McLellan 1989), in general, fewer km of open roads decrease the probability of bear-human encounters which typically provide better bear habitats and increase the chance of bear survival (McLellan and Shackleton 1988; McLellan 1990; Mace *et al.* 1996). Overall, the ability for landscape units to provide high quality grizzly bear habitat is related to the amount of foraging habitat (both forested and non-forested areas) maintained as well as the extent of open roads (i.e., road density) and their level of human use.

Because grizzly bears are sensitive to specific land uses, sub-regional planning processes (LRMPs, SRMPs) can provide the necessary spatial scale (i.e., thousands km^2) to meet their needs for relatively large areas. To address this requirement, the *Grizzly Bear Conservation Strategy* (1995) recognized land and resource management planning processes as the primary initiative to address landscape level requirements including the establishment of Grizzly Bear Management Areas (GBMAs). As such, grizzly bears are considered a higher level plan species where additional management direction is needed to meet their landscape level requirements, especially as they relate to seral stage distribution and road access.

The SRMMP area contains portions of three Grizzly Bear Population Units (GBPU) including the South Rockies, Flathead and Yaak. The Rockies and Flathead GBPUs are estimated to be healthy viable populations whereas the Yaak is listed as threatened[8]. The Flathead watershed supports the highest density of interior grizzly bears in North America. The watershed functions as the center of the linkage between the Northern Continental Divide Ecosystem population in the United States and contiguous populations of grizzlies in Canada and as a recruitment source for Alberta, the state of Montana and adjacent watersheds in British Columbia.

Current Status and Anticipated Trends

The KBLUP *Implementation Strategy* (1997) outlined grizzly bear management guidelines that addressed maintenance of critical feeding areas as well as access management. Those guidelines apply to Grizzly Bear Priority Areas, which have been grouped into three classes (high, medium, low) based on habitat suitability. In addition, the Higher Level Plan Order includes provisions to maintain mature and/or old forest adjacent to avalanche chutes important to grizzly bears (Objective # 5). The amount of mature and old forest available, however, is dependent on how much remains after complying with other HLPO objectives (e.g., OGMAs, caribou). As such, the extent to which this objective can be applied across the plan area is unclear at this time. Although the overall intent of the HLPO objective is positive because it could reduce disturbance and potential displacement from grizzly bear feeding and security areas, implementation of this objective has been contingent on the completion of avalanche chute mapping, which has only recently been completed. Hence, this objective has the potential to maintain habitat effectiveness in the future; however, until the objective is fully implemented operable portions of these grizzly bear habitats remain vulnerable to forest harvesting activities.

---

[8] A threshold of 50% of minimum habitat capability arbitrarily defines "threatened" (<50%) and "viable" (>50%) (WLAP)

The GIS analysis indicated a large percentage of the SRMMP area (73%) contains high and medium grizzly bear priority areas (554,095 ha; Table 7). Of the total grizzly bear habitat identified (639,677 ha), 18.6% occurs on the timber harvesting land base and another 20.5% occurs on private land. The remaining amount is distributed between forested and non-forested exclusions, which occur outside the timber harvesting land base.

Table 7. Areal breakdown of grizzly bear priority areas by land base category. SRMMP

Grizzly Bear	FE	NFE	PRIVATE	THLB	Total
1 (Highest Priority)	26,026	115,705	10,371	49,878	201,980
2 (Medium Priority)	35,314	157,398	92,182	67,221	352,115
3 (Lowest Priority)	7,063	47,630	28,746	2,143	85,581
Total hectares (% of total)	**68,404 (10.7%)**	**320,732 (50.1%)**	**131,299 (20.5%)**	**119,242 (18.6%)**	**639,677 (100%)**

FE = forested exclusions; NFE = non-forested exclusions: private = private land; THLB = timber harvesting land base.

This area summary suggests about 39% of grizzly bear habitat is at risk from resource development activities that occur on both crown (THLB) and private land. Because there are opportunities to more easily mitigate the potential adverse effects on crown land, the grizzly bear habitat on private land poses somewhat higher risks.

Of the grizzly bear habitat that occurs on the timber harvesting land base, the BEO seral stage distributions will affect landscape level forage requirements of grizzly bears. As mentioned previously most of the SRMMP area including the high priority grizzly bear areas will be managed to meet Intermediate biodiversity age class objectives. Whether an Intermediate BEO is compatible with maintaining grizzly bear habitat requirements will largely depend on available seral budgets as well as where and how the mature and old forest is distributed within each landscape unit. If the mature and old forests are retained, for example, in a *Forest Ecosystem Network* (FEN) that includes high elevation feeding areas, timbered areas encompassing avalanche chutes as well as valley bottom riparian areas, then Intermediate Biodiversity may provide adequate habitat conditions and pose only moderate risk levels to grizzly bear habitat. However, if the mature and old forests are concentrated only in inoperable areas or poor productivity sites then clearly the risks to bears are much higher as seasonal habitats remain vulnerable.

In addition to seral stage distribution, there are a number of other factors that influence grizzly bear survival including road access (forestry, mining, recreation), permanent settlements (private land) and the development of large commercial recreation facilities. All of these factors have the potential to increase bear-human conflicts and increase grizzly bear mortality risk. In areas outside of parks (e.g., Akamina-Kishinena), there needs to be effective access and recreation management strategies developed and implemented that will minimize the risks to grizzly bears to ensure long term population survival.

Overall, the relative risks to grizzly bears will vary throughout the plan area. Risks will remain high on private land as well as areas where seral stage distribution may be incompatible over the long term such as Low BEOs. However, over the majority of SRMMP area, risks are moderate assuming the HLPO and KBLUP-IS is fully implemented.

11.0 Other Wildlife and Plant Species at Risk

Background

Conservation Data Centre (CDC) is charged with the task of tracking the status of wildlife species and plant communities at risk in the province. The listed rare plant communities typically include those that are: (i) rare or uncommon on the landscape; (ii) contain unique species or elements; or (iii) declining in representation due to alienation from the forest land base or stand conversion. There are a total of 10 red-listed and 6 blue-listed plant communities in the Cranbrook Forest District. Most of these occur in the IDF and PP biogeoclimatic zones (see Appendix 2.). The CDC has also identified a total of 18 blue and 10 red-listed wildlife species in the Cranbrook Forest District. Of these, all of them are known to occur or have the potential to occur in the SRMMP area, except mountain caribou.

Current Status and Anticipated Trend

The outlook for wildlife species at risk as well as rare plant communities is somewhat mixed. Some wildlife species, for example, may be adequately addressed as part of the *Identified Wildlife Management Strategy* (IWMS) through the establishment of Wildlife Habitat Areas (WHAs) or implementation of recommended general wildlife measures. However, other species have yet to be identified in Volume I or II and many management strategies outlined in the IWMS remain discretionary. How the IWMS will be implemented under the new results-based Forest Practices Code also remains unclear, which creates additional uncertainty.

Specific gaps in current management include tailed frog habitat, which remains vulnerable because they use riparian forests and small non-fish bearing streams (e.g. S5), which have no riparian buffer zone under the FPC. Although nest trees are protected under the Wildlife Act, Northern Goshawk habitat remains vulnerable due to declining interior forest conditions. Although some wildlife species that require higher level plan direction to meet landscape level management objectives have been addressed in the HLPO (e.g., grizzly bear) other IWMS species (e.g., bull trout, fisher) remain at moderate to high risk due to a lack of (legally binding) higher-level plan management direction.

120.0 Furbearers (Marten)

Background and Assumptions

Marten require relatively large areas of mature and old growth conifer forests with abundant coarse-woody debris to provide suitable foraging and denning habitat. Although marten populations have been shown to benefit from some forest harvesting within their home range (early seral stages provide habitat for some small mammals which in turn can increase their prey base), marten densities tend to decline proportionately with decreasing amounts of mature and old conifer forests (Thompson 1994; Thompson and Harestad 1994). Therefore, a High Biodiversity Emphasis Option would provide age class objectives most compatible (least risk) with maintaining mature forests as well as forest interior conditions required by marten.

Current Status and Anticipated Trends

Because about 18.5% of the SRMMP area will be managed to meet High biodiversity age class objectives suggests relatively low to moderate risks for marten populations in these areas. However, most of the plan area will be managed to meet Intermediate biodiversity age class objectives, which will result in a decline of mature and old forests and reduced habitat suitability. Furthermore, the TSR (1999) indicated less area of mature and old forests over the next 50 years (region wide), which may result in marten densities eventually declining to lower levels than present. However, because areas excluded from timber harvesting may provide some suitable habitat, the extent to which marten populations could decline is not clear. Nonetheless, managing more marten habitat to meet at least High biodiversity age class objectives and using alternative silvicultural systems may partly reduce the potential impacts by maintaining old growth attributes (e.g., large trees, coarse woody debris).

13.0 Fisheries

Background and Assumptions

The maintenance of the fishery resource is dependent upon the preservation of freshwater aquatic habitat for spawning, incubation and rearing. Forestry, mining, agricultural development and urban development have the potential to impact aquatic ecosystems by altering riparian areas which have direct and indirect effects on water quantity and quality. Riparian areas along streams and lakes act as filter strips that trap sediment and sideslope debris from adjacent roads and harvested areas. Removal of riparian trees can result in excessive sedimentation, which reduces water quality (dissolved oxygen) required to support salmonid eggs and alevins. Tree removal within riparian areas reduces a number of important fish habitat components including Large Organic Debris (LOD) sources, litterfall and food production of streamside areas. Removal of riparian trees can also decrease channel and bank stability and increase water temperatures. Overall, reduction in habitat diversity and stream productivity can result in reduced fish availability and species diversity. In addition to habitat related concerns, fishery resources are vulnerable to over-exploitation.

The Elk, Flathead, Wigwam and Bull Rivers as well as their tributaries are the major fish bearing streams in the SRMMP area. These rivers support a variety of fish species including mountain white fish, longnose sucker, kokanee, brook trout, rainbow trout, as well as three blue listed species: mottled sculpin, westslope cutthroat trout and bull trout. Bull trout are extremely sensitive to habitat degradation. They have more specific habitat requirements than other salmonid species and require well-oxygenated water within narrow cold temperatures and therefore are considered an indicator of ecosystem health. Distribution and abundance are strongly influenced by channel and hydrologic stability, substrate composition, cover, temperature. Maintenance of migration corridors is critical to reduce fragmentation of habitat.

Current Status and Anticipated Trend

The protection of environmental resource values, including fish and fish habitat, is a stated objective of the *Forest Practices Code of British Columbia Act* (FPC) introduced in 1995. Relevant components of the FPC and associated guidebooks provide protection for fisheries resources through watershed assessments, the establishment of riparian reserve and management zones, fisheries sensitive zones, and stringent stream crossing and road deactivation requirements. Watershed assessments, especially those streams with significant downstream fisheries values are also expected to be an integral component of the new results-based Forest Practices Code.

Watershed assessment procedures developed for the FPC have become an essential analytical tool for evaluating the cumulative effects of development activities on the natural hydrologic and sediment transport regimes of rivers throughout the Province. Watershed assessments provide a framework to evaluate the development status of watersheds and consider many variables such as terrain sensitivity, roads, and equivalent clearcut area[9]. Operational guidelines for community and domestic watersheds were also outlined in the KBLUP-IS (1997)

The potential for forestry and mining development activities to negatively impact fish and fish habitat will likely increase as resource development pressures increase over time. Although we do not know the exact amount of road development that will occur in the future, new roads will be built to gain access to merchantable timber as well as to new mine sites. Therefore, the potential for future road development to negatively impact fish habitat will increase over time. However, recommendations outlined in the FPC *Riparian Management Area Guidebook* partly reduce the risk to fisheries values. Overall, the risk to fish habitat is moderate, however, risks are higher for smaller streams (S4, S5, S6) due to a lack of adequate protection. In addition, a lack of a complete inventory for bull trout (a blue-listed species) suggests bull trout populations remain at risk.

14.0 Conclusions

The information presented in this Base Case report suggests although some environmental values in the SRMMP area are receiving adequate protection and management, certain wildlife species and elements of biodiversity (e.g., old growth, coarse woody debris) remain at high risk. This is largely due to a number of factors including:

- the large amount of private land
- limitations of existing policies (e.g., LUPG)
- rate of forest harvest and cumulative impacts (mining/oil and gas)
- the fact that many components of the KBLUP-IS including the HLPO have yet to be fully implemented and landscape unit objectives are not in place.

Although there will be provisions in the results-based Forest Practices Code to protect environmental values (e.g., ungulate winter range), specific details regarding the regulations remain uncertain at this time.

Careful attention to the distribution of mature forest retention during landscape unit or SRMP planning may mitigate some of the potential impacts and risks associated with reduced amounts of mature forest cover. This may be especially important in landscape units designated as Intermediate BEO because many of the regionally significant wildlife values occur in these areas. Similarly, effective and achievable recreation and access management strategies need to be clearly defined and implemented during the SRMMP process. This is crucial because the risks associated with increased road access will continue to increase over time as potential recreation forestry, oil and gas as well as mineral exploration/development activities proceed. The magnitude of the potential impacts will largely depend on the extent of development and the management strategies implemented to mitigate the potential effects.

---

[9] "Equivalent Clearcut Area" is the proportional area of forest within a watershed unit that is at an equivalent state of hydrologic recovery as a recent clear-cut, which is determined by applying a reduction factor based on stand age to account for hydrologic recovery due to forest regeneration.

It should be emphasised that the ability of each species to respond to disturbance and their ability to cope with a changing environment (i.e. resilience) varies among species. We know, for example, that some species are more resilient than others, so the relative risks to these species are somewhat less than those that are less resilient (e.g., area or dispersal-limited species such as grizzly bears and tailed frogs).

Overall, current management practices within the SRMMP suggests species dependent on early seral forests will benefit the most whereas species dependent on old forest structures (wildlife trees, coarse woody debris) and/or large contiguous areas of old growth (forest interior conditions) remain at moderate to high risk in the short and long term. Although the HLPO will help reduce the risks to specific components of biodiversity, comprehensive access management and recreation land use zoning including landscape level management direction from the SRMMP is required to maintain the significant conservation values in the East Kootenays. Some of the management recommendations set out in the KBLUP-IS (1997) should continue to be implemented as they offer ways of reducing risks to biodiversity.

15.0 References

Bergmann, M.A., S, Ferson, and H.R. Akcakaya. 1993. Risk assessment in conservation biology. Chapman Hall. University Press Cambridge. pp 309.

BC. Environment. 1995. A future for the Grizzly: *British Columbia Grizzly Bear Conservation Strategy*. pp. 15.

Bunnell, F.L. and L.L. Kremsater. 1990. Sustaining wildlife in managed forests. Northwest Environ. Journal. 6:243-270.

Bunnell, F.L. 1995. Forest-dwelling vertebrate faunas and natural fire regimes in British Columbia: patterns and implications for conservation. *Conservation Biology*. Vol. 9 (3): 636-644.

Bunnell, F.L. and L.L. Kremsater. 1990. Sustaining wildlife in managed forests. *Northwest Environ. Journal*. 6:243-270.

Cole, D.N., and P.B. Landres. 1996. Threats to wilderness ecosystems: impacts and research needs. *Ecological Applications* 6:168-184.

Cote, Steeve, D. 1996. Mountain goat responses to helicopter disturbance. *Wildlife Society Bulletin* 24: 681-685.

Dupuis, L., and K. Wilson.1999. Status, distribution and management needs of the tailed frog in the East Kootenays Ministry of Environment Lands and Parks, Kootenay Region, Wildlife Branch website publication (http://www.env.gov.bc.ca/kor/wld/wld.html)

Foster,B.R. and E.T. Rahs. 1983. Mountain goat responses to hydroelectric exploration in northwestern British Columbia. *Environmental Management* 7: 189-197.

Flathead Transboundary Network. 1999. State of the Crown of the Continent Ecosystem: Flathead/ Castle Transboundary Region (Draft). Calgary: Miistakis Institute for the Rockies.

Forest Practices Code (FPC) of British Columbia 1999. *Landscape Unit Planning Guide.*

Forest Practices Code (FPC) of British Columbia 1999. *Managing Identified Wildlife: Procedure and Measures. Vol I.*

Forest Practices Code (FPC) of British Columbia. 1995. *Riparian Management Area Guidebook.*

Forest Practices Code (FPC) of British Columbia. 1996. *Lake Classification and Lakeshore Management Guidebook*

Forest Practices Code (FPC) of British Columbia. 1995. *Biodiversity Guidebook.*

Franklin, J.F. 1993. Lessons from old growth. J. Forestry (Dec): 11-13

Kareiva, P. and U. Wennergren. 1995. Connected landscape patterns to ecosystem and population processes. *Nature.* Vol.373 :299-302.

Kinley, T.A. and N.J. Newhouse. 1997. Relationship of riparian reserve zone width to bird density and diversity in southeastern British Columbia. *Northwest Science* 71:75-87.

Kootenay Boundary Land Use Plan – Multiple Accounts Assessment 1996. October Draft Report

Kootenay Boundary Land Use Plan – Implementation Strategy. 1997.

Mace, R. D., J.S Waller, T.L. Manly, L.J. Lyon and H. Zuuring. 1996. Relationships among grizzly bears, roads and habitat in the Swan Mountains, Montana. Journal of Applied. Ecology. 33: 1395-1404.

Mattson, D.J., Herrero, S, R.G. Wright, and C.M. Pease. 1996. Science and management of Rocky Mountain grizzly bears. Conservation Biology. Vol 10 (4): 1013-1025.

McLellan, B.N. 1990. Relationships between human industrial activity and grizzly bears. Int. Conf. Bear. Res. and Manage. 8:57-64.

McLellan, B.N. 1989. Dynamics of a grizzly bear population during a period of industrial extraction. III. Natality and rate of increase. Can. J. Zool. 67: 1865-1868.

McLellan, B.N., and D. M. Shackleton. 1988. Grizzly bears and resource extraction industries: effects of roads on behaviour, habitat use and demography. J. Applied Ecology 25:451-460.

McLellan, B.N., and D. M. Shackleton. 1989. Grizzly bears and resource extraction industries: habitat displacement in response to seismic exploration, timber harvesting and road maintenance. J. Applied Ecology 26:371-380.

Ministry of Forests. 2002 .British Columbia Wildlife Tree Evaluation Project: Draft Report

Ministry of Forests. 1999. Timber Supply Review (Cranbrook TSA).

Morrison, M.L., B.G. Marcot, and R.W. Mannan. 1992. *Wildlife-Habitat Relationships. Concepts and Applications.* The University of Wisconsin Press. pp. 343.

Naiman, R.J., H. Decamps and M. Pollock. 1993. The role of riparian corridors in maintaining regional biodiversity. *Ecological Applications* 3: 209-212.

Noss, R.F. 1990. Indicators for monitoring biodiversity: a hierarchical approach. *Conservation Biology* 4: 355-364.

O'Neill,R., C.T. Hunsaker, K.B. Jones, K.H. Riitters, J.D. Wickham, P.M. Schartz, I.A.Goodman, B.L. Kackson and W.S.Baillargeon. 1997. Monitoring environmental quality at the landscape scale: using landscape indicators to assess biotic diversity, watershed integrity and landscape stability. *Bioscience* 47: 513-519.

Patch, J. 1988. Habitat supply analysis and forest management. Trans. 52nd N.A. Wildl. & Nat. Res. Conf. 53-59.

Pojar, J., K. Klinka, and D.V. Meidinger. 1987. Biogeoclimatic ecosystem classification in British Columbia. For. Ecol. Manage. 22: 119-154.

Rieman, B.E. and J.D. McIntyre. 1993. Demographic and habitat requirements for conservation of bull trout. U.S. Department of Agriculture, Forest Service, Intermountain Research Station. General Technical Report INT-302. Ogden, UT. 38 pp.

Ruggerio. L.F., G.D. Hayward and J.R. Squires. 1994. Viability analysis in biological evaluations: concepts of population viability analysis, biological population and ecological scale. 1994. *Conservation Biology* 8: 364-372.

Steeger, C. 2002. new guidelines for selecting ecologically appropriate wildlife tree patches. In Optimizing wildlife trees an coarse woody debris retention at the stand and landscape level. Winter workshop, January 22-24, 2002. Prince George, B.C.

Stevens, V. 1995. Wildlife diversity in British Columbia: distribution and habitat use of amphibians, reptiles, birds and mammals in biogeoclimatic zones. B.C. Ministry of Forests, Research Branch, Victoria, B.C. Working Paper No. 04. pp. 288.

Teske, I., and B. Forbes. 2002. East Kootenay Rocky Mountain Bighorn Sheep Inventory: winter 2001-2002. MWLAP, Cranbrook.

Thompson, I. 1994. Marten populations in uncut and logged boreal forests in Ontario. *J. Wildl. Manage.* 58:272-280.

Thompson I.D., and A. S. Harested. 1994. Effects of logging on american martens. In *Martens, Sables and Fishers. Biology and Conservation* Eds. S.W. Buskirk, A.S. Harested, M.G. Raphael and R.A. Powell. Cornell University Press. pp-355-376.

Toews, D.A.A. and M.J. Brownlee. 1981. A handbook for fish habitat protection on forest lands in British Columbia. Department of Fisheries and Oceans. Vancouver, B.C. pp.173

Weaver, J.L. Paquet, P.C. and L.F. Ruggerio. 1996. Resilience and conservation of large carnivores. Conservation Biology. Vol 10. (4) 964-976.

With, K.A., R.H. Gardner and M..H. Turner. 1997. Landscape connectivity and population distribution in heterogeneous environments. *Oikos* 78: 151-169.

Appendix 1.0 The amount of crown forest land base (CFLB) by Landscape Unit and Biogeoclimatic subzone/variant

		Biodiversity Emphasis Option		
LU_NAME	BECLABEL	High (ha)	Intermediate (ha)	Low (ha)
Alexander - Line	ESSFdk		6346	
Alexander - Line	ESSFdkp		7	
Alexander - Line	ESSFdku		1184	
Alexander - Line	IDFun		25	
Alexander - Line	MSdk		2107	
Corbin Creek	ESSFdk			2471
Corbin Creek	ESSFdkp			3
Corbin Creek	ESSFdku			459
Corbin Creek	MSdk			372
Corbin Creek	NODATA			0
East Elk	ESSFdk			3
East Elk	MSdk			1055
East Flathead	ESSFdk		19597	
East Flathead	ESSFdkp		4	
East Flathead	ESSFdku		1291	
East Flathead	MSdk		20442	
East Flathead	NODATA		1	
Fording River	ESSFdk		9570	
Fording River	ESSFdkp		34	
Fording River	ESSFdku		1734	
Fording River	MSdk		869	
Galbraith - Dibble	ESSFdk		3876	
Galbraith - Dibble	ESSFdkp		3	
Galbraith - Dibble	ESSFdku		295	
Galbraith - Dibble	ESSFwm		6276	
Galbraith - Dibble	ESSFwmp		150	
Galbraith - Dibble	ESSFwmu		1288	
Galbraith - Dibble	ICHdm		2203	
Galbraith - Dibble	ICHmk1		8388	
Galbraith - Dibble	IDFdm2		57	
Galbraith - Dibble	MSdk		5436	
Galton Range	IDFdm2			902
Galton Range	MSdk			91
Iron - Sulphur	ESSFdk		3970	
Iron - Sulphur	ESSFdku		590	
Iron - Sulphur	ESSFwm		4592	
Iron - Sulphur	ESSFwmp		27	
Iron - Sulphur	ESSFwmu		418	
Iron - Sulphur	ICHmk1		10837	
Iron - Sulphur	IDFdm2		128	
Iron - Sulphur	MSdk		2291	

Jaffray - Baynes Lak	IDFdm2			798
Jaffray - Baynes Lak	PPdh2			273
Lodgepole - Bighorn	ESSFdk		8403	
Lodgepole - Bighorn	ESSFdku		451	
Lodgepole - Bighorn	ESSFwm		2697	
Lodgepole - Bighorn	ESSFwmp		41	
Lodgepole - Bighorn	ESSFwmu		727	
Lodgepole - Bighorn	ICHmk1	3359		
Lodgepole - Bighorn	IDFdm2	92		
Lodgepole - Bighorn	MSdk	5213		
Lower Elk	ESSFdk	523		
Lower Elk	ESSFdku	170		
Lower Elk	ESSFwm	2488		
Lower Elk	ESSFwmp	178		
Lower Elk	ESSFwmu	668		
Lower Elk	ICHmk1	8364		
Lower Elk	IDFdm2	149		
Lower Elk	MSdk	1332		
Sand Creek	ESSFdk		1295	
Sand Creek	ESSFdku		168	
Sand Creek	ESSFwm		2628	
Sand Creek	ESSFwmu		124	
Sand Creek	ICHdm		3394	
Sand Creek	IDFdm2		191	
Sand Creek	IDFdm2a		296	
Sand Creek	MSdk		2001	
Upper Bull	ESSFdk		15507	
Upper Bull	ESSFdkp		119	
Upper Bull	ESSFdku		1903	
Upper Bull	MSdk		8774	
Upper Bull	NODATA		25	
Upper Elk	ESSFdk		15742	
Upper Elk	ESSFdkp		39	
Upper Elk	ESSFdku		1978	
Upper Elk	MSdk		5078	
Upper Elk	NODATA		8	
Upper Flathead	ESSFdk		10885	
Upper Flathead	ESSFdkp		115	
Upper Flathead	ESSFdku		1933	

Upper Flathead	MSdk		1124	
West Elk	ESSFdk	12630		
West Elk	ESSFdkp	136		
West Elk	ESSFdku	2729		
West Elk	MSdk		12264	
West Elk	NODATA		0	
West Flathead	ESSFdk		20907	
West Flathead	ESSFdkp		54	
West Flathead	ESSFdku		1019	
West Flathead	MSdk		12550	
West Flathead	NODATA		0	
Wigwam River	ESSFdk	11996		
Wigwam River	ESSFdku	673		
Wigwam River	MSdk	6802		
TOTAL	**310406 (100%)**	**57502 (18.5%)**	**246476 (79.4%)**	**6428 (2.1%)**

Appendix 2.0 A list of red and blue-listed vertebrate species and rare plant communities known to occur or have the potential to occur in the SRMMP area (CDC 2002).

Common Name	Scientific Name	Provincial List
BIRDS		
White-throated Swift	*Aeronautes saxatalis*	BLUE
Great Blue heron, *herodias* subspecies	*Ardea herodias herodias*	BLUE
Short-eared Owl	*Asio flammeus*	BLUE
American Bittern	*Botaurus lentiginosus*	BLUE
Swainson's Hawk	*Buteo swainsoni*	RED
Bobolink	*Dolichonyx oryzivorus*	BLUE
Prairie Falcon	*Falco mexicanus*	RED
Peregrine Falcon, *anatum* subspecies	*Falco peregrinus anatum*	RED
Sandhill Crane	*Grus canadensis*	BLUE
Lewis's Woodpecker	*Melanerpes lewis*	BLUE
Long-billed Curlew	*Numenius americanus*	BLUE
Flammulated Owl	*Otus flammeolus*	BLUE
Western Screech-Owl, *macfarlanei* subspecies	*Otus kennicottii macfarlanei*	RED
Williamson's sapsucker, *nataliae* subspecies	*Sphyrapicus thyroideus nataliae*	RED
Sharp-tailed Grouse, *columbianus* subspecies	*Tympanuchus phasianellus columbianus*	BLUE
MAMMALS		
Southern Red-backed Vole, *galei* subspecies	*Clethrionomys gapperi galei*	BLUE
Wolverine, *luscus* subspecies	*Gulo gulo luscus*	BLUE
Fisher	*Martes pennanti*	BLUE
Northern Long-eared Myotis	*Myotis septentrionalis*	BLUE
Bighorn Sheep	*Ovis canadensis*	BLUE
Least Chipmunk, *oreocetes* subspecies	*Tamias minimus oreocetes*	BLUE
Red-tailed Chipmunk, *ruficaudus* subspecies	*Tamias ruficaudus ruficaudus*	RED
Badger	*Taxidea taxus*	RED
Grizzly Bear	*Ursus arctos*	BLUE
AMPHIBIAN		
Rocky Mountain Tailed Frog	*Ascaphus montanus*	RED
Northern Leopard Frog	*Rana pipiens*	RED
REPTILE		
Painted Turtle	*Chrysemys picta*	BLUE

Appendix 2.0 con't – Red and Blue-listed plant communities

Scientific name	English name	Biogeoclimatic Site Unit(s)	Provincial Rank	Provincial List
Anemone occidentalis - Carex nigricans	Western pasqueflower - black alpine sedge	AT ESSFdkp/00 ESSFwcp1/00	S2	Red
Betula nana / Equisetum	Scrub birch / horsetail	IDFdm2/06	S3	Blue
Distichlis stricta - Hordeum jubatum	Saltgrass - foxtail barley	IDFdm2/00	S1	Red
Picea engelmanii x glauca - Larix occidentalis - Mahonia aquifolium	Hybrid white spruce - western larch - Oregon-grape	IDFdm2/05	S2	Red
Picea engelmanii x glauca / Ribes lacustre / Aralia nudicaulis	Hybrid white spruce / gooseberry / sarsaparilla	ICHmk1/05	S3?	Blue
Pinus ponderosa - Populus tremuloides / Rosa woodsii	Ponderosa pine - trembling aspen / rose [Solomon's seal]	PPdh2/03	S1	Red
Pinus ponderosa / Pseudotoegneria spicata - Lupinus	Ponderosa pine / bluebunch wheatgrass - lupine	PPdh1/01 PPdh2/01	S2	Red
Populus balsamifera ssp. *trichocarpa / Cornus stolonifera - Rosa nutkana*	Black cottonwood / red-osier dogwood - Nootka rose	PPdh2/04	S1S2	Red
Pseudoroegneria spicata - Koeleria macrantha	Bluebunch wheatgrass - junegrass	IDFuu/00 IDFdm1/02 PPdh2/02a PPdh2/02b	S2	Red
Pseudotsuga menziesii - Larix occidentalis - Picea / Calamagrostis rubescens	Douglas-fir - western larch - spruce / pinegrass	IDFdm1/05 IDFdm2/04	S3	Blue
Pseudotsuga menziesii - Penstemon fruticosus - Calamagrostis rubescens	Douglas-fir - penstemon - pinegrass	ICHmk1/02 MSdm1/02	S3	Blue
Pseudotsuga menziesii - Pinus contorta - Alnus viridus ssp. *sinuata - Calamagrostis rubescens*	Douglas-fir - lodgepole pine - Sitka alder - pinegrass	ICHmk1/04	S3	Blue
Pseudotsuga menziesii / Symphoricarpos albus / Balsamorhiza sagittata	Douglas-fir / snowberry / balsamroot	IDFdm2/03	S2	Red
Purshia tridentata / Pseudoroegneria spicata	Antelope-brush / bluebunch wheatgrass	IDFdm2/02 PPdh2/00	S2	Red
Symphoricarpos occidentalis - Festuca idahoensis	Western snowberry - Idaho fescue	IDFdm2/00?	S2?	Red
Thuja - Paxistima - Lonicera utahensis	Western redcedar/hybrid white spruce - falsebox	ICHmk1/01	S3	Blue

Changes from the 2000 list include the results of the most recent ranking review of natural plant communities. Additions to the Red and Blue list include some natural plant communities previously considered secure and now recognized as vulnerable, as well as rare plant communities recently described from new inventory data. Successional and Structural stages for each plant community are currently under review and have been removed from the list until the next update.

Biogeoclimatic Site Unit(s): This column indicates the BGC unit(s) in which each plant community is known to occur (future inventories may indicate range extensions). The two digit number following the slash (01 and up) indicates that the community is part of the B.C. Ministry of Forests (MOF) site series classification. Information on the site series classification can be found in the MOF Field Guides for Site Identification (http://www.for.gov.bc.ca/research/becweb). A two digit number of '00' indicates that the community is not part of the MOF site series classification but is a recognized community from other vegetation and site classifications, and ecosystem mapping projects). The original source information for these communities can be obtained by contacting the CDC directly (contact info above).

Socio-Economic Assessment of the Public Review Draft Southern Rocky Mountain Management Plan

June 11th, 2003

Presented to the Ministry of Sustainable Resource Management

Prepared by:

Pierce Lefebvre Consulting
3705 West 18th Ave.
Vancouver, B.C.
V6S 1B3
Tel: (604) 224-0648
Fax: (604) 224-5722
piercelef@telus.net

Acknowledgements and Disclaimer

Throughout this study the consultants received excellent cooperation from the Ministry of Sustainable Resource Management, the Ministry of Water Lands and Parks, the Ministry of Forests and various industry, community and recreation stakeholder representatives. We wish to thank everyone who kindly donated their time to answer questions, provide data and clarify issues. Without this help, we would not have been able to prepare this report and conduct our analysis.

In developing the socio-economic estimates prepared for this study, the consultants have made several forecasts and assumptions utilizing information gathered under the time and resource constraints imposed on this study. These forecasts and assumptions are thought to be reasonable and suitable for the purposes of this analysis, but should not be relied upon for other purposes.

The Plan Area boundaries do not, in general, coincide with management unit boundaries for the resource values under consideration in the Plan. It has therefore been very difficult to source baseline data and assess impacts of the Plan on these resource values. In undertaking this task, the consultants have been required to make estimates of the socio-economic significance of resource values and associated activities in the Plan Area, based on data from much broader or much narrower geographic areas or management jurisdictions.

Socio-Economic Assessment of the Public Review Draft Southern Rocky Mountain Management Plan

TABLE OF CONTENTS

EXECUTIVE SUMMARY i

1 INTRODUCTION 1

- 1.1 SRMMP OBJECTIVES 1
- 1.2 MSRM METHODOLOGY FOR SOCIO-ECONOMIC ASSESSMENT 2

2 ASSESSMENT OF PLAN IMPACTS ON INDUSTRIAL SECTORS 3

- 2.1 COAL MINING 3
- 2.2 METALS AND MINERALS: 4
- 2.3 ENERGY 5
- 2.4 FORESTRY 6

3 ASSESSMENT OF PLAN IMPACTS ON BACKCOUNTRY RECREATION AND TOURISM 12

- 3.1 BACKCOUNTRY RECREATION IN THE SRMMP AREA 12
- 3.2 SRMMP RECREATION MANAGEMENT STRATEGY 12
  - *3.2.1 Ground Based Access Designations:* *13*
  - *3.2.2 Aerial Access Designation:* *15*
  - *3.2.3 Recreation Management Zones (RM1 to RM4)* *15*
  - *3.2.4 Forest Service Recreation Sites and Trails:* *16*
  - *3.2.5 Trans-Canada Trail* *17*
- 3.3 RESIDENT HUNTING 17
- 3.4 RESIDENT ANGLING 18
- 3.5 BACKCOUNTRY TOURISM IN THE SRMMP AREA 18
  - *3.5.1 Adventure Travel Commercial Operators* *19*
  - *3.5.2 Guide-Outfitting* *19*
  - *3.5.3 Guided Angling* *20*
- 3.6 ASSESSMENT OF SRMMP IMPACTS ON BACKCOUNTRY RECREATION AND TOURISM 20
- 3.7 ASSESSMENT OF SRMMP IMPACTS ON HUNTING AND ANGLING 23

4 ASSESSMENT OF PLAN IMPACTS ON AGRICULTURE AND TRAPPING 24

- 4.1 AGRICULTURE 24
- 4.2 TRAPPING 24

5 ASSESSMENT OF PLAN IMPACTS ON FIRST NATIONS 25

6 ASSESSMENT OF PLAN IMPACTS ON SETTLEMENTS 26

7 SUMMARY AND CONCLUSIONS 28

TABLE OF CONTENTS

LIST OF TABLES

Table 1 Incidence of Conservation Values on Plan Area Timber Harvesting Land Base 8
Table 2 Timber Volume and Harvesting Cost Impacts of SRMMP Management Objectives. 9
Table 3 Percent of SRMMP Area by Ground Based Access Management Category 13
Table 4 Percent of the SRMMP Area by Recreation Management Zone 16
Table 5 Assessment of SRMMP Impacts on Backcountry Recreation and Tourism 21
Table 6 Mining Sector Employment, Industry Taxes and Net Economic Value 30
Table 7 Forest Sector Industry Taxes, Employment and Net Economic Value 31
Table 8 Hunting Effort, Expenditures and Net Economic Value for the SRMMP Area 34
Table 9 Recreational Fishing Expenditures in the Elk River, 2002 36
Table 10 Recreational Fishing Expenditures in the SRMMP Area 36
Table 11 Expenditures on Wildlife Activities in Kootenay Region and SRMMP Area 37
Table 12 Net Economic Value from Wildlife Activities, Kootenay Region & SRMMP Area 37
Table 13 Economic Parameters of Guide Outfitting in BC and the SRMMP Area 40
Table 14 East Kootenay Hunting Effort for Selected Management Units, 1984-1993............ 42
Table 15 East Kootenay Hunting Effort for Selected Management Units, 1999-2001............ 43
Table 16 Socio-Economic Impacts of Adventure Travel Operators in SRMMP 44
Table 17 Total Socio-Economic Impacts from Adventure Travel Operators in SRMMP 45

LIST OF CHARTS

Chart 1 BC Resident Hunting License Sales 1976 - 2001 33

LIST OF APPENDICES

APPENDIX 1 SRMMP MAJOR INDUSTRIAL SECTORS.. 30
APPENDIX 2 BACKCOUNTRY RECREATION 33
APPENDIX 3 BACKCOUNTRY COMMERCIAL OPERATIONS 40
APPENDIX 4 SOCIO-ECONOMIC IMPACT PARAMETERS BY SRMMP ACTIVITY 46
APPENDIX 5 SOCIO-ECONOMIC SIGNIFICANCE BY SECTOR AND SRMMP IMPACTS. 47
APPENDIX 6 BIBLIOGRAPHY.. 53

EXECUTIVE SUMMARY

The Public Review Draft Southern Rocky Mountain Management Plan (SRMMP) is the landscape unit level implementation of the East Kootenay Land Use Plan (1995), the Kootenay / Boundary Land Use Plan and Implementation Strategy (1997), and the Kootenay-Boundary Higher Level Plan (2002). These earlier plans made broad strategic choices for the use and management of lands in the East Kootenay region, including the lands now comprising the SRMMP area. Thus, the SRMMP lands are expected to play a strategic role in the balance of ecological, economic and social values within the entire East Kootenay context.

The stated intent of the SRMMP to balance "economic, social and environmental values for the long-term health of the economy, communities and ecosystems" is tempered by the overriding requirement to be consistent with the broader strategic vision supplied by the earlier planning processes.

Much of the specific management direction in the SRMMP, as well as the general emphasis on conservation and development in different parts of the Plan Area, is derived directly from the KBLUP.

This socio-economic assessment of the SRMMP does not attempt to maintain a regional or provincial strategic perspective on the contribution of Plan Area resource values, but rather views the Plan Area as an essentially isolated land unit.

This socio-economic assessment assumes that the management objectives and direction outlined in the SRMMP can and will be applied and enforced in the Plan Area. No attempt has been made to assess the likelihood or feasibility of implementing management objectives.

The extent to which the public review draft SRMMP achieves ecological objectives is not addressed in this assessment, but is the subject of a separate, concurrent analysis.

The entire SRMMP Plan Area falls within the Ktunaxa Nation's Traditional Territory. The Ktunaxa have expressed concern about their limited capacity to effectively participate in the planning process, and do not consider the consultation that occurred prior to publication of the draft plan to be meaningful or adequate. The public review draft SRMMP states the intent to provide for cultural, economic and environmental interests of the Ktunaxa, and to continue to pursue consultation with the Ktunaxa Nation. In the course of this assessment, no effective facility or mechanism was established to gather information on how the SRMMP may impact the interests of the Ktunaxa Nation, and no assessment of those impacts is therefore attempted.

Socio-Economic Assessment

In general, the public review draft SRMMP appears to facilitate economic activity, while balancing social concerns related to outdoor recreation, by:

- Delivering tangible degrees of certainty of access to crown land resources for extractive industries, which anchor the economies and basic viability of adjacent communities;
- Zoning the SRMMP land base to accommodate a variety of outdoor recreation activities and commercial tourism operations;

- Maintaining wilderness and wildlife values supporting the guide outfitting industry and recreational hunting; and
- Maintaining fish habitat supporting the guided angling industry and recreational angling.

By sector and/or activity, the Plan impacts are assessed as follows:

SRMMP Impact	Sector or Activity	Socio-Economic Significance in Plan Area	
		Current	Potential
Very Positive	Guide Outfitting	Modest	Modest
Positive	Metal and Mineral Exploration	Minor	Modest
	Metal and Mineral Mining	None	Modest
	Conventional Oil & Gas	None	Modest
	Coal Bed Methane	Minor	Substantial
	Forest Industry	Substantial	Substantial
	Guided Angling	Modest	Modest
	Trapping	Minor	Minor
	Non-Motorized Resident Backcountry Recreation	Substantial	Substantial
	Backcountry Adventure Travel Operators	Modest	Modest
Neutral	Coal Exploration and Mine Development	Minor	Substantial
	Coal Mining	None	Substantial
	Agriculture	Minor	Minor
Negative	Motorized Summer Resident Backcountry Recreation	Modest	Modest
	Recreational Snowmobiling	Modest	Substantial
	Heli-Aided Commercial Recreation	None	Modest
	Heli-Aided Resident Recreation	Minor	Modest
	New Backcountry Lodge Development	None	Modest

- Impacts are assessed as neutral or positive for most sectors or activities judged to have a substantial current or potential socio-economic impact. The exception is recreational snowmobiling, which is thought to have substantial potential socio-economic impact, but will experience somewhat negative impacts from the SRMMP on balance.
- Negative impacts relate primarily to potential recreation or tourism activities that are not well established in the Plan Area.
- With respect to the tourism and recreation sectors the SRMMP appears to be oriented more toward "maintaining" existing economic and social activity patterns, than providing for new economic activities and social diversity. For example:
  - The Plan is very restrictive for summer motorized recreation;
  - The Plan forecloses on the likely modest opportunities to develop helicopter aided adventure tourism; and
  - The Plan is very restrictive with respect to developing backcountry lodges.

These restrictions may have justification in supporting ecological or other socio-economic values, but it is important to note that they are not without cost.

- The Plan may confer unintended benefits on 'grand fathered' commercial recreation tenure holders whose licensed activities do not conform to the Recreation Management Plan zoning contained within the SRMMP.
- Plan restrictions on new backcountry lodges may confer unintended benefits on the owners of existing backcountry lodges and cabins that can be upgraded or replaced.

In general, coal industry impacts from the SRMMP will be experienced in Fernie, Sparwood and Elkford, and forest industry impacts in Elko, Jaffrey and Cranbrook. The SRMMP adds some certainty of access to resources for the mining and forest industries, which should result in some increase in confidence in the basic viability of the affected communities. This impact will likely be difficult to detect, however, in the face of the many other regulatory, operating and market uncertainties faced by these industries.

SRMMP impacts on recreation and tourism will be felt in all of the communities mentioned above. The impacts on resident recreation will largely reinforce the lifestyle choices made by the existing populations in these communities. It appears as though past patterns of recreational use and activity have been defended in the Plan, in the face of new motorized technologies that threaten to erode the enjoyment of these activities in many areas.

The Plan may have negative impacts on the ability of Elkford (the most vulnerable of the three major communities), to diversify its economic base through attracting more motorized recreation tourists. Elkford has difficulty, however, capturing the economic benefits of recreation activity.

1 Introduction

The BC Ministry of Sustainable Resource Management (MSRM) released the Public Review Draft Southern Rocky Mountain Management Plan (SRMMP) in February 2003 for public review and comment. The planning process requires an independent socio-economic assessment of the draft plan to be completed prior to finalization and adoption of the plan. This socio-economic assessment compares the economic and social prospects expected to be generated by plan area resources under the public review draft SRMMP, with the economic and social prospects outlined in the socio-economic Base Case document prepared during the formulation of the draft plan.

This section reviews the general objectives and intent of the SRMMP and provides an overview of the methodology suggested by MSRM for socio-economic assessments.

1.1 SRMMP Objectives

The Southern Rocky Mountain Management Plan covers the Flathead, Wigwam, the east side of the Bull River and the west side of the Elk River drainages in the southeast corner of British Columbia. The intent of the plan is to facilitate sustainable economic development. The plan aims to balance economic, social and environmental values for the long-term health of the economy, communities and ecosystems.

As a landscape-level plan, the SRMMP is intended to be consistent with the Cabinet-approved strategic regional land-use direction for the area:
- East Kootenay Land Use Plan (EKLUP, 1995);
- Kootenay-Boundary Land Use Plan Implementation Strategy (KBLUP-IS, 1997); and
- Kootenay-Boundary Higher Level Plan (KBHLP, 2002).

The first two provided policy direction, while the third established Resource Management Zones and legal Objectives for forest development under the Forest Practices Code. The SRMMP also incorporates and builds on these broader-level plans, and is intended to provide a "one-stop shop" for clear land and resource management direction in the area, replacing all the broader-level land use plans for the SRMMP area.

In addition to the requirement of consistency with broader-level plans, there is a list of expectations of the plan outcomes, expressed in the plan mandate, some of which are particularly pertinent to this socio-economic assessment. The SRMMP is mandated to:

- be consistent with provincial sustainability principles
- recognize and balance all resource values and uses
- stimulate sustainable economic development
- provide certainty
- respect existing tenures and rights in the plan area

Much of the management direction in the SRMMP represents the landscape level implementation of management direction provided by the above noted broader-level strategic plans. This Socio-Economic Assessment will first examine the overall impacts of the SRMMP package, and then attribute the impacts either to new initiatives of the SRMMP itself, or to the other broader strategic plans or regulatory initiatives that directed much of the content of the SRMMP.

Major assumptions applied throughout this analysis include:

1. That the management objectives and direction outlined in the SRMMP can and will be applied and enforced in the Plan Area. No attempt has been made to assess the likelihood or feasibility of implementing management objectives.
2. That the impacts assessed are those related to the use, enjoyment or existence of Plan Area resources. No attempt has been made to assess the degree to which resource use in areas adjacent to, or otherwise outside of, the Plan Area might adjust to changes in resource use in the Plan Area.

1.2 MSRM Methodology for Socio-Economic Assessment

MSRM, in collaboration with *Pierce Lefebvre Consulting*, has prepared Guiding Principles to help assess the socio-economic impacts associated with land use planning[1]. As noted in these Guiding Principles, the socio-economic and environmental implications of land and resource management plans and/or scenarios can be assessed from a number of perspectives:

1. Benefit-cost analysis estimates the differences in net value of the market and non-market outputs generated by the plan and/or each scenario from a pure "economic efficiency" or "net resource value" perspective.
    - For commercial sectors, the net resource value (or economic rent) represents the above-normal financial returns from a commercial activity that occur as a result of the product or service generated by that activity being in relatively fixed supply relative to demand. Rent can accrue to the entrepreneur, be captured by the land and/or resource owner (government) or be incorporated in wages paid to labour.
    - For non-commercial activities such as recreation and the benefits associated with environmental resources, the net benefits fall into two categories: use-related values (e.g. recreation, food gathering, air and fresh water) and existence-related values.
2. Environmental risk assessment estimates the changes in likelihood of adverse environmental impacts resulting from human activities.

3. Economic impact analysis estimates impacts of the plan and/or scenarios on income and employment within specific communities, regions, or the Province as a whole.

4. Social impact analysis identifies and evaluates impacts of the plan and/or scenarios on demographic, local government and community concerns.

Each of these perspectives alone addresses only specific aspects of the consequences of a plan. The objective of socio-economic and environmental assessments are to review the complete array of social, economic and environmental impacts from a plan and present the information in tabular or matrix format to facilitate the review of the information by decision makers. For the SRMMP, the environmental risk assessment for the SRMMP is being conducted as a separate analysis from the socio-economic assessment. This report is therefore concerned only with the social and economic impacts associated with the plan.

---

[1] MSRM, *Socio-Economic and Environmental Assessment for Land and Resource Management Planning in British Columbia: Guiding Principles*, Draft for Discussion Purposes, January 2003.

2 Assessment of Plan Impacts on Industrial Sectors

2.1 Coal Mining

There are five operating coal mines near the Plan Area, which have approximately 2,500[2] employees and generate an estimated $39 million in annual government revenues (including property taxes of $2.8 million to the community of Elkford, $2.3 million to Fernie and $1.8 million to Sparwood)[3]. While the operating mines are located outside of the plan area, they provide the economic foundation of the three major communities most directly connected to Plan Area resources. Appendix 1 to this report estimates the economic impacts of the East Kootenay coal industry in the region and the province. These annual impacts include $172 million in direct employment income, and another $116 million in indirect and induced employment income (these figures are not adjusted for leakage of employment income to Alberta, which is thought to be considerable).

The 'net economic value' of the East Kootenay coal mining industry to the province is estimated at $16 million per annum.

As noted in the Base Case background information, exploration has revealed coal resources in, and near the Plan Area but outside the existing mine sites. These include: the Sage Creek proposal, which has been dormant since the 1980s; the Flathead Townsite and Lodgepole properties, also currently inactive; and the Bingay Creek property north of Elkford.

Most of the known coal resources in the southeast Kootenays that are located on crown lands are on lands designated by the KBLUP-IS as Enhanced Resource Development Zones (ERDZ-Coal). This designation places increased emphasis on managing the lands for coal resource development, but the details of how that emphasis will be expressed in specific management direction have not yet been established.

One of the objectives of the SRMMP was to specify new guidelines for the ERDZ-Coal lands. Most of the East Kootenay ERDZs for coal are located close to, but outside of the Plan Area. It was anticipated that the Plan Area boundaries might expand to include more of the coal lands, but this had not yet occurred. The ERDZ-Coal lands within the Plan Area include a small area in the northern Elk Valley, and another small area in the upper Flathead (these two areas comprise 6,950 hectares, representing about 18% of the ERDZ-Coal lands)

Significant known coal resources in the Plan Area, which are not on ERDZ-Coal lands include Sage Creek Coal's licenses in the lower Flathead area. The SRMMP emphasis on habitat conservation and wilderness preservation in the Lower Flathead area could have cost implications for the development of the Sage Creek coal licenses.

While the SRMMP confirms the boundaries of the ERDZ-Coal lands and reiterates that the designation represents a long-term priority commitment and long-term security of access for the coal industry, it does not develop any specific ERDZ-Coal guidelines. This is noted in the plan as a potential future project, which would address all East Kootenay ERDZ-Coal lands both within and outside the SRMMP area.

---

[2] Recent layoffs at Line Creek Mine (270 employees) associated with the ownership consolidation of the five operating coal mines have likely reduced this number since the Base Case document was prepared.

[3] Roger Berdusco, personal communication.

Elements of the SRMMP that may have some cost implications for exploration and development of coal resources in the Plan Area include access restrictions, connectivity provisions and grizzly bear management provisions. The coal license holder for the Bingay Creek property has expressed concern that inclusion of this property in the SRMMP is giving potential investors pause when evaluating the feasibility of putting the property into production[4] (despite its ERDZ – Coal designation).

The SRMMP emphasizes the two-zone system for the mining sector, although legislation for the two-zone system is enacted under the Mineral Tenure Act, which does not specifically apply to coal mining.

SUMMARY OF SOCIO-ECONOMIC IMPACTS OF THE SRMMP ON **COAL MINING**:

- Does not impact existing coal mining operations.
- Confirms boundaries of the ERDZ-Coal lands, but does not specify ERDZ-Coal guidelines, which it intended to do. This has left some uncertainty for licence holders on ERDZ-Coal lands in the Plan Area.
- Designates conservation measures for the Lower Flathead area, which could increase development costs for known coal resources in the area.

OVERALL SOCIO-ECONOMIC IMPACT: **NEUTRAL**

2.2 Metals and Minerals:

There are no operating metal or industrial mineral mines in the Plan Area. Rankings of metal mining potential suggest that the potential in the Plan Area is comparatively modest[5]. Metal and industrial minerals exploration projects in the Plan Area include the Ice diamond project north of Elkford, the Crowsnest and Howell gold properties in the Flathead area, and the Commerce Resources property also in the Flathead.

Total exploration expenditures for the Plan Area are not readily available, but data from the MEM Assessment Report Index (ARIS) database show that between 1970 and 2001, an average of 11% of registered East Kootenay mineral exploration expenditures have been expended in the Plan Area, or an estimated $250,000 per year after accounting for inflation ($2002) and generating approximately 3 PYs of employment each year. While the exploration expenditures have minimal socio-economic impacts, the benefits associated with mineral exploration would accrue mainly as a result of exploration being successful at identifying a mineable deposit.

In 2002, the B.C. Government legislated a two-zone system for mining along with a 'single-window' permitting process for exploration and development of mineral resources. The SRMMP confirms the two-zone system for mining in the Plan Area, stating numerous times that mineral exploration and development is permitted anywhere outside of protected areas, subject to measures to limit impacts on other values as outlined in the Mineral Exploration Code and mine development regulations.

---

[4] William Shenfield, written comment submission to SRMMP study team.

[5] Holman, Gary and Pierce Lefebvre Consulting, *Socio-Economic Base Case for the Southern Rocky Mountain Management Plan*, 2002, Appendix 5.

The SRMMP's clear statement on the two-zone mining system brings more certainty that mineral exploration, and ultimately mining will be permitted in the SRMMP area. While a similar statement on the ability to explore and mine anywhere outside of protected areas was made in earlier broad level plans (i.e. EKLUP and KBLUP-IS), the zoning and management objectives presented in those plans created confusion in the mining community about the ability to explore, develop prospects and mine in some of the zones or management areas. The legislated two-zone system, and its more forceful expression in the SRMMP, should lead to increased confidence and certainty that mineral resources can be found and developed in the Plan Area. This is likely to take several years to be expressed in increased exploration and/or development, and will be subject to external factors such as metal and mineral commodity prices.

There are known significant mineral occurrences in the Flathead area, and the proposed national park in that region would likely alienate some of those mineral resources. The SRMMP, with its emphasis on preserving and enhancing ecological values in Landscape Unit C18, may diminish the perceived need for expanded protected areas in the Flathead drainage.

SUMMARY OF SOCIO-ECONOMIC IMPACTS OF THE PLAN ON **METALS AND MINERALS EXPLORATION, DEVELOPMENT AND MINING**:

- Confirms the two-zone system for mining in the Plan Area, stating numerous times that mineral exploration and development are permitted anywhere outside the protected areas.
- Designates conservation measures for the Lower Flathead area, which could increase development costs of the copper and gold prospects in that region. On the other hand, these conservation measures may help reduce the need or demand for additional parks in the area.

OVERALL SOCIO-ECONOMIC IMPACT:
POSITIVE, as the probability of finding and developing a mineable deposit is now increased; the positive impact results primarily from the two-zone legislation, rather than the SRMMP.

2.3 Energy

The Geological Survey of Canada estimates that undiscovered potential energy resources total 88 million barrels of oil, 400 billion cubic feet of natural gas, and 33 trillion cubic feet of coalbed methane in the Fernie Sedimentary Basin[6]. While much of this basin lies east of the Plan Area, there is significant overlap with the Plan Area, particularly in the southern portions.

Traditional Oil and Gas Exploration and Development:

At present, there is no traditional oil and gas development activity in the Plan Area. The Flathead area is viewed as having high oil and gas potential that has not been fully explored[7], and while several wells were drilled in the past, there has been no activity recently. Conservation management objectives in the SRMMP could have some cost implications for exploration and development in parts of the Flathead should industry choose to pursue this potential in the future.

---

[6] www.em.gov.bc.ca/Oil&gas/initiatives/Graphics/BCSedBasPipMap1.jpg

[7] Monahan, P.A., *The Geology and Oil and Gas Potential of the Flathead Area, Southeastern BC*, for BC Ministry of Energy and Mines, 2000.

Coal Bed Methane:

The substantial coal bed methane potential associated with the Elk Valley and Crowsnest coalfields lies outside of the Plan Area for the most part. Areas of overlap include the north end of landscape unit C23 in the upper Elk Valley, and significant portions of landscape unit C17 in the upper Flathead. Current exploration and development activity is outside of the Plan Area in the Elk Valley coal field, where Encana has 11 wells on production pilot testing.

The government of B.C. recently introduced new legislation to clarify the ownership of coalbed gas rights as distinct from coal rights, to enable coalbed methane development in the province to proceed with greater certainty.

An industry representative[8] contacted as part of this study indicated they are generally pleased with the language in the SRMMP and the certainty it brings to potential development activity in the Plan Area. Any potential cost impacts with respect to the upfront surveying requirements outlined in the SRMMP may be felt in parts of the Crowsnest field if coal bed methane development moves to those areas.

SUMMARY OF SOCIO-ECONOMIC IMPACTS OF THE PLAN ON **ENERGY RESOURCES**:

- Potential exploration and development cost increases in some areas are balanced against the generally greater certainty of how and where development can proceed.

OVERALL SOCIO-ECONOMIC IMPACT: **POSITIVE**

2.4 Forestry

The contribution of the crown forest lands in the SRMMP area to the South East Kootenay region's forest industry is documented in the Socio-Economic Base Case[9] for the SRMMP. The crown timber harvesting land base (THLB) in the SRMMP area comprises 19.2% of the crown THLB in the Cranbrook Forest District. Assuming that this land base is able to support a pro-rata share of the Cranbrook Forest District's timber harvest (AAC), the SRMMP area contributes about 165,000 m3 of timber per year to the region's forest industries (this does not include a similar volume harvested from private lands adjacent to the Plan Area).

Appendix 1 to this report outlines the annual economic impacts derived from the Plan Area timber harvest including 155 person years (PYs) of direct employment, $7.2 million in direct employment income and $2.75 million in stumpage revenues to government. Indirect and induced employment multipliers for this industry are relatively high (1.26 additional indirect and induced PYs for each direct PY), and add another 195 PYs of employment and $6.7 million in employment income to the total provincial economic impact. The 'net economic value' of the timber resources provided by the SRMMP area land base is estimated at $3.11 million per annum.

---

[8] Allan Greeves, EnCana, personal communication

[9] Holman, Gary and Pierce Lefebvre Consulting, *Socio-Economic Base Case for the Southern Rocky Mountain Management Plan*, 2002.

The economic impacts of the SRMMP area timber resources are spread across the Elk Valley communities of Sparwood, Fernie, and Elko, as well as Jaffray, Wardner and Cranbrook further to the west.

The stated intent of the SRMMP is to maintain access to the timber harvesting land base, maintain short term and long-term timber supply, and maintain an environmentally and economically sustainable timber industry within the Plan Area.

Management of timber harvesting in the Plan Area has altered substantially over the past decade, directed by provisions of the East Kootenay Land Use Plan (1994), the Forest Practices Code (1995 and subsequent amendments), The Kootenay Boundary Land Use Plan – Implementation Strategy (1997) and the associated Kootenay-Boundary Higher Level Plan Order (2002). In addition, there are major upcoming changes to timber tenure regulations and timber pricing mechanisms for crown forests[10] that could prompt wide scale industry restructuring.

As noted in the SRMMP Socio-Economic Base Case[11], most of the expected timber harvesting land base and timber harvest volume impacts of the KBLUP-IS were factored into the Cranbrook Timber Supply Area allowable annual cut determination, effective January 1,2001[12]. The SRMMP process, which is essentially the landscape unit level interpretation/implementation of broader strategic direction provided by the earlier plans, was not anticipated to have any significant impacts on timber volumes available for harvest. Any incremental impacts associated with the SRMMP were expected to affect harvesting costs, rather than volumes available[13].

Management objectives in the SRMMP that may have specific impacts on the forest industry include the Enhanced Resource Development Zones for Timber, the Recreation Management Strategy, Conservation objectives, Water management objectives and Visual Landscape objectives.

The following tables and paragraphs provide an indication of how some of the SRMMP management objectives are expected to impact timber harvesting activities, and the potential significance of those impacts. The Connectivity Matrix components noted in the table below are listed in order of their degree of constraint on harvesting in affected areas, from most constraining to least constraining.

---

[10] BC Ministry of Forests, *B.C. Heartlands Economic Strategy - The Forestry Revitalization Plan*, Victoria, March 2003.

[11] Ibid, pg. 44-45

[12] B.C. Ministry of Forests, Chief Forester Larry Pederson, *Cranbrook Timber Supply Area, Rationale for Allowable Annual Cut Determination, Effective January 1,2001*.

[13] Holman, Gary and Pierce Lefebvre Consulting, pg.45

Table 1 Incidence of Conservation Values on Plan Area Timber Harvesting Land Base

Managed Values	Area in Hectares	Portion of THLB
Connectivity Matrix		
Old Growth Management Area	7,762[2]	8.9%
Mature Seral Management Area	3,145	3.6%
Riparian Areas	2,338	2.7%
Backcountry River Corridors	6,301	7.2%
Avalanche Chutes & Adjacent	178	0.2%
Ungulate Winter Range (PEM)	27,872	32.0%
Connectivity Matrix Sub-total	47,596	54.7%
Not in Connectivity Matrix	39,486	45.3%
Total Timber Harvesting Land Base	87,082[3]	100.0%

Notes:

1. Source: GIS data supplied by Russ Hendry, MSRM
2. Is not consistent with the estimate in Appendix 23 of the SRMMP (8,324 hectares).
3. The above table includes all of Landscape Unit C27. The THLB of the Plan Area (excluding the western portion of LU C27) is estimated at 78,179 hectares.

Spatially deployed OGMAs and Mature Seral Management Areas account for 12.5% of the timber harvesting land base, and require full retention of existing forest stands (with the exception of some selective removal under certain circumstances).

While the above table shows that 8.9% of the THLB is in OGMAs, the analysis in Appendix 23 of the Plan shows that the Landscape Unit Planning Guide (MoF) would have allowed a greater percentage to be set aside for OGMAs. As a result, the MSRM does not expect any negative volume implications from the spatially deployed OGMAs in the SRMMP. Similar analysis for other SRMMP objectives is not available, but MSRM staff believe that volume impacts will be very limited and perhaps slightly positive for short term timber supply, compared to previous management. Without a complete analysis of these objectives, incorporated into the timber supply model for the entire Cranbrook Timber Supply Area, it is not possible to definitively determine if there will be volume (AAC) implications, which in any event will be the decision of the Ministry of Forests' Chief Forester.

The table following indicates the expected incremental impacts (relative to current harvesting practices) of managing for non-timber values as specified in the SRMMP, on timber harvesting costs and volume in areas affected. This table is based on discussions with MSRM staff, Ministry of Forests staff and industry representatives. Industry representatives are less convinced that the SRMMP management objectives will not negatively impact available timber volumes, and are quite sure that there will be some significant logging cost increases associated with some of the management objectives.

Table 2 Timber Volume and Harvesting Cost Impacts of SRMMP Management Objectives

Management Objective	Volume Impact	Cost Impact	Source of Management Guidelines			
			KBLUP -IS	FPC	HLPO	SRMMP Contribution
Riparian	No change in riparian management (MSRM); industry expressed concern over perceived reserve zone requirements for S4, S5 and S6 streams; also 500 meter zones for Backcountry River Corridors seem inconsistent with KBLUP-IS	Flathead crossing limitations may increase logging costs (MSRM); industry indicates likely cost implications from Backcountry River Corridor crossing restrictions.	X	X		Flathead Enhanced Riparian Management
Old Growth/ Mature	HLPO relaxed mature requirements in LU 16,17,24,25,26, and 27 as well as some BEC units in others	Spatial designation of OGMAs/Mature should increase operating efficiency(MSRM), but industry indicates flexibility will be reduced		X	X	Spatial mapping of OGMAs and Mature retention areas
Wildlife Tree Retention	no change in management	May reduce planning effort as the plan provides interpretation of Wildlife Tree Retention tables		X		Plan provides interpretation of Wildlife Tree Retention tables
Wide-Ranging Carnivores (Core Grizzly Security)	100% retention in avalanche track adjacencies no significant volume impacts, very small total area	None, although it is unclear how some statements of intent will be implemented None	X		X	Interpretation and implementation SRMMP maps core grizzly habitat
Core Grizzly Security	No significant volume impact (MSRM)		X			
Ungulate Winter Range[1]	Increase in short term timber availability through reduced cover constraints	Activity restriction from mid Jan. to late March on UWR may have substantial cost implications if logging is forced to higher elevations with deeper snow	X	X		Changes in management and mapping for UWR were the product of the Kootenay Ungulate Winter Range Committee
Species at Risk	Unknown; need species at risk inventories and management plans	Unknown; need species at risk inventories and management plans	X	X		
Access Management	None	Access control could impose additional costs on industry. Alternatively costs related to existing public use may fall. Smaller, lower cost roads may be possible.	X			Recreation Management Strategy incorporated into SRMMP

Management Objective	Volume Impact	Cost Impact	Source of Management Guidelines			
			KBLUP -IS	FPC	HLPO	SRMMP Contribution
Connectivity	Matrix approach may produce lower impacts than KBLUP-IS corridor approach would have imposed; TSR2 did not model connectivity	Planning costs may be reduced	X		X	Implemented matrix approach rather than corridor approach suggested in KBLUP -IS
Community Watersheds	No new constraints	No new constraints	X	X		
Visual Landscapes	No change from existing (MSRM)	Visual impact analysis required	X	X	X	
Other Consumptive Streams and Watersheds	No change from existing	Some additional planning costs	X	X	X	

Notes:

1. Ungulate Winter Range management guidelines in the Kootenay region are not the same as elsewhere in the province, and are a recent product of the Kootenay Ungulate Winter Range Committee.

The SRMMP confirms the Enhanced Resource Development Zones for Timber (ERDZ-T) outlined in the Kootenay Boundary Higher Level Plan Order. No new management objectives are initiated by the SRMMP in respect of these areas, and it is unclear if any volume or cost advantages can be expected to result from these areas. Industry representatives questioned the efficiency of the location and layout of some of these areas.

The overall Plan emphasis on maintaining and/or enhancing wilderness attributes of the lower Flathead area may reduce the need or demand for protected area status, and a possible significant reduction in the timber harvesting land base.

Although there are still many aspects of the SRMMP which contribute to continuing forest industry uncertainty regarding access to an economic timber supply (industrial access management and several of the statements of intent with respect to non-timber values), it does deliver certainty in many areas that have been of concern to industry. Spacial deployment of old growth and mature targets, implementation of biodiversity emphasis, ungulate winter range management and connectivity provisions appear to be well specified in the SRMMP. This should relieve industry uncertainty about how these concepts, outlined in the broader strategic plans, will be implemented.

The forest products industry in B.C. is increasingly being required to demonstrate that it is managed and operated in a sustainable manner, while respecting and maintaining ecological and other non-timber forest values. The SRMMP should help in convincing forest product consumers, certification agencies, local residents and the world community that this is in fact the case in the Plan Area.

SUMMARY OF SOCIO-ECONOMIC IMPACTS OF THE PLAN ON **FORESTRY**:

- Positive timber volume influences from new Ungulate Winter Range management and the matrix approach to Connectivity, should offset any negative influences from Riparian or Backcountry River Corridor management objectives.
- Logging costs may increase as a result of management prescriptions relating to riparian areas, particularly in the Flathead area and from seasonal activity restrictions on Ungulate Winter Range; also, recreation access control may impose costs on licensees.
- Greater restrictions in the Flathead area may reduce demand for the establishment of more protected area in that region, which would prevent timber harvesting entirely.
- The spatial designation of OGMAs/Mature, the Connectivity Matrix and the SRMMP interpretation of Wildlife Tree Retention tables should reduce planning costs. Some of the savings in planning costs may be partially offset by the requirements for visual impact analyses and by additional costs related to planning for logging near consumptive streams and watersheds.
- All of the SRMMP management objectives are rooted to some degree in the EKLUP, the KBLUP-IS, the KB-HLPO or the Forest Practices Code.
- The SRMMP has at least partially delivered a tangible level of timber access and land management certainty.
- The SRMMP is likely to assist companies in achieving some levels of forest stewardship certification and in demonstrating to the wider community that sound forest management is being practiced. Vulnerability to product boycotts or production disruptions will likely be reduced.

OVERALL SOCIO-ECONOMIC IMPACT:
POSITIVE, neutral volume impacts with logging cost increases in some areas are at least balanced by the benefits of certainty and demonstrated good forest management.

3 Assessment of Plan Impacts on Backcountry Recreation and Tourism

3.1 Backcountry Recreation in the SRMMP Area

Backcountry recreation opportunities are very important to the residents of communities surrounding the Southern Rocky Mountain Management Plan area (there are no communities actually inside the Plan Area boundaries). Many people have chosen to live in this region, in part, due to the wide selection of backcountry recreation opportunities available.

Spring/Summer/Fall

- Angling
- ATVs, motorbikes
- Botanical forest products/ wood gathering
- Caving
- Fossil gathering and fossil tours
- Heli-hiking
- Hiking, wildlife viewing, photography
- Horseback trail riding
- Hunting
- Mountain biking
- River rafting, canoeing, kayaking
- Rock hounding & recreational prospecting

Winter/Spring

- Cat-skiing
- Heli-skiing
- Ski-touring
- Snowmobiling

The SRMMP area represents a significant portion of the land base in the region hosting these recreation activities. While the Plan Area offers some unique combinations of terrain, flora, fauna, wilderness and solitude to support these activities, most of these activities are also available and accessible on nearby lands outside of the Plan Area, including provincial crown lands, federal crown lands and large blocks of private land.

Appendix 2 provides an overview of the socio-economic importance of backcountry recreation activities in the SRMMP region.

3.2 SRMMP Recreation Management Strategy

The SRMMP incorporates a Recreation Management Strategy (RMS) that attempts to balance competing demands among recreational user groups and between residents and visitors while minimizing environmental impacts associated with recreation activities. The RMS specifies three major types of recreation management direction for the plan area:

- Ground based access management;
- Aerial based access management; and
- Recreation infrastructure development and use management.

In addition, the RMS provides guidelines for the use of BC Forest Service (BCFS) Recreation Sites and BCFS trails, and states the intent that "provincial Crown land will not be set aside in the plan area for the purposes of establishing a route for the Trans-Canada Trail."

Other statements of intent include:

- Consistent application of management direction for both commercial and public recreation
- Guide development of new commercial recreation opportunities on Crown land
- Commercial recreation tenures issued prior to Jan.1, 2003 will 'be unaffected by' the RMS
- Industrial access is not constrained by the RMS

The RMS is also considered to be a crucial element of the conservation initiatives detailed in the public review draft SRMMP, and in particular, provisions for maintaining and improving wildlife habitat connectivity.

The intent that existing commercial recreation tenures 'be unaffected by' the RMS is probably not attainable. Where the activities promoted by commercial recreation tenures do not conform to the RMS management objectives, the tenures will likely be negatively affected if they are required to conform, or positively affected if they are not required to conform. If not required to conform, an unintended exclusivity benefit will be conferred that is likely to enhance the value of these tenures. At the time of this analysis, no information was available on the extent of conformity or non-conformity of commercial recreation tenures to the SRMMP in general, and the RMS in particular.

3.2.1 Ground Based Access Designations:

The SRMMP specifies five ground based access designations: RA1 designates the areas reserved for non-motorized activities, RA2 designates areas available for motorized activities with timing and/or location restrictions, RA2.1 and RA2.2 designate areas available for snowmobile use but otherwise non-motorized, and RA3 designates areas available for motorized and non-motorized uses.

The ground based access management objectives are expressed in the plan in a table and two maps, which cover both summer (April 15 to December 14) and winter (December 15 to April 14) access periods. The maps illustrate access management direction for the Plan Area, as well as additional lands which, combined with the Plan Area, form the Resource Evaluation Area referred to in Base Case documents.

The following table summarizes GIS data on the proportions of the Plan Area covered by the various ground based access management categories:

Table 3 Percent of SRMMP Area by Ground Based Access Management Category

Ground Based Access	Summer (% of Plan Area)	Winter (% of Plan Area)
RA1	99.6%	41.5%
RA2	0.4%	51.7%
RA2.1		2.9%
RA2.2		3.9%

Notes:

1. Source: GIS data supplied by Russ Hendry, MSRM
2. Does not include parks, federal or private lands but includes all of LU C27, much of which is outside the Plan Area.
3. Data received were adjusted to better conform to the RM tables in the SRMMP document.

The data suggests that the summer period access management is far more strict with respect to motorized access than the winter period. Motorized use in the summer period is restricted entirely to mapped road surfaces, whereas motorized use in the winter period is permitted across large blocks of Plan Area lands.

Much of the Plan Area is not physically accessible by ground based motorized means, and while the above data may have more significance for ecological values, they are not particularly illustrative of impacts on economic or social values. Ideally one would want to screen out those areas that are not physically accessible by motorized means, before undertaking an analysis of how much of the remaining lands fall into the various access management categories. Available time and resources did not permit such an analysis.

In assessing the impacts of the ground based access management objectives, it is assumed that these objectives will be implemented and enforced. There has been considerable concern and scepticism expressed by stakeholder groups about how access management will be implemented and enforced, and who will bear the economic and social costs of implementation and enforcement.

Activities that should be most benefited by the ground based access management objectives in the Plan Area are non-motorized activities including ski touring, mountain biking, hiking/wildlife viewing and horseback trail riding. The most severely constrained activities are those utilizing ATVs and motorbikes to access backcountry areas. In general, commercial recreation operators will likely receive more of the benefits of access management and be less inconvenienced by the restrictions involved, than public recreationists.

A stated objective of the RMS is to reduce conflicts between incompatible recreation activities in the backcountry. The extent and intensity of the existing levels of conflict is not clear, but there is little evidence to suggest that it is widespread. Appendix 17.0 of the SRMMP provides some background information, by landscape unit, derived from the RMS consultation process. While some 'overlap of incompatible uses' was noted in some of the landscape units, local agreements appear to have resolved most of the potential conflicts. Overcrowding from a social perspective does not appear to be a problem at present, except in some specific locations in landscape unit C24.

Much of the overlap of incompatible winter recreation activities occurs in the Fernie 'snow belt' area where proximity to the major population and tourism centre combines with the best snow conditions to create competition between cat-skiing, snowmobiling and ski touring for the best locations. While local agreements between clubs representing the different uses have been very helpful in avoiding conflict in specific areas, these clubs do not represent all users. Non-club members and the increasing number of visiting recreationists have compromised these local agreements to some extent.[14]

For the overall Plan Area, the ground based access management objectives appear to be more concerned with heading off potential future conflicts arising from incompatible recreational uses, than dealing with widespread existing incompatibilities. There is a twenty year history of demand for access management in the Plan Area, but this appears to have been driven more by ecological concerns than social conflict concerns.[15]

---

[14] Pat Gilmar, Elk Valley Ski Touring Association – personal communication

[15] See draft SRMMP Appendix 24.3.6 - Strategic Access Management Planning

3.2.2 *Aerial Access Designation:*

The SRMMP specifies aerial access zoning including RH1 which discourages aerial access, RH2 which designates some point locations for landing and RH3 which allows aerial access.

The entire Plan Area is designated RH1 (aerial access discouraged) for both the summer and winter periods, with the exceptions of a few (maps and tables in the draft plan do not seem to agree) RH2 point landing sites for backcountry ski touring. The are no RH3 (aerial access permitted) lands in the Plan Area.

The SRMMP is clear that helicopter-dependent commercial recreation tenures will be discouraged in the Plan Area, and that commercial heli-skiing, heli-hiking, heli-angling and heli-biking are precluded by the SRMMP. Less clear is how the RH1 designation will apply to non-commercial recreation activities.

The potential for commercial heli-skiing in the Plan Area is limited by slope, terrain, snow quality and avalanche hazard conditions.[16] It would be difficult for operators in the Plan Area to compete with heli-skiing operations in more suitable areas of the province. There does appear to be some potential for commercial and/or recreational heli-aided hiking, mountain biking and angling in the Plan Area, which would be curtailed or foreclosed by the SRMMP. This is traded off for preservation of ecological values and the opportunity to provide an outdoor recreation venue where heli-aided activities are not permitted, perhaps establishing the region as a major destination for this market segment. This would appear to be at odds with the intent of increasing the yield per visitor stated in the SRMMP chapter on tourism, as revenues (and expenses) from heli-aided activities are generally much higher than those from strictly ground accessed activities.

3.2.3 *Recreation Management Zones (RM1 to RM4)*

Recreation Management Zones outlined in the SRMMP are intended to channel recreation facility development and recreation use intensity to the most appropriate areas, given the overall ecological and social objectives of the plan. These zones reinforce, to a large extent, the existing development and use patterns in the plan area.[17]

The four management zone classifications range from the lowest levels of facility development, recreation use and managerial presence (RM1) to the highest (RM4). The classifications are not mapped in the public review draft SRMMP, but rather are fairly vaguely described in a table by landscape unit. GIS data developed by MSRM[18] indicates the following breakdown of the Plan Area by recreation management zone:

---

[16] Bob Jamieson and Greg Goodison - personal communications

[17] Stephen Flett, MSRM – personal communication

[18] Russ Hendry, MSRM, March 18/03; data have been adjusted to conform better to the SRMMP document.

Table 4 Percent of the SRMMP Area by Recreation Management Zone

Rec. Management Classification	Summer (% of Plan Area)	Winter (% of Plan Area)
RM1	66%	32%
RM2	34%	68%
RM3	0%	0%
RM4	0%	0%

1. Does not include parks, federal or private lands but includes all of LU C27, much of which is outside the Plan Area.
2. Data received were adjusted to better conform to the RM tables in the SRMMP document.
3. No RM3 area is shown in this data, even though some RM3 zones are mentioned in both Section B.7.0 of the SRMMP and Appendix 17.0 of the SRMMP.

Consistent with the ground based access management objectives, the recreation management objectives provide for more extensive use and development of the Plan Area land base in the winter period than in the summer period.

There are several anomalies between the three sources of data on RM zones (Table B.7.1.2, Appendix 17.0 and the GIS data) that had not been reconciled before the submission of this report. In addition, it is not clear in the public review draft SRMMP where the RM zoning is primarily concerned with activity levels and where it is primarily concerned with infrastructure development. One must presume that where an area (say LU C16) is zoned differently for the summer period (RM1) and the winter period (RM2), the more restrictive summer zoning applies to both periods in respect of infrastructure development.

The RM designations, in general, are consistent with other provisions in the public review draft SRMMP that put the greatest emphasis on ecological conservation in landscape units C14 and C18, but also discourage permanent structure development anywhere in the Plan Area outside of landscape unit C24. Objective 9.9.6 in the SRMMP, with respect to preserving connectivity, states that expansion of, or new, permanent recreation or tourism-related facilities are not permitted in the inoperable connectivity or ungulate winter range in landscape units C14, C16, C18 and C23.

Replacement and/or upgrading of existing recreation or tourism-related facilities are permitted. As demand for wilderness lodge experiences increases, these 'grand fathered' facilities will likely be upgraded and used more extensively.

3.2.4 Forest Service Recreation Sites and Trails:

The SRMMP Recreation Management Strategy lists the various uses allowed for each Forest Service Recreation Site. These uses have been previously prescribed as legal objectives under the Forest Practices Code. For the most part the objectives for the sites and trails conform to the recreation access and development management strategies outlined elsewhere in the SRMMP. There are some anomalies that will need to be addressed in operational planning for some areas.

A subjective assessment of the use trends for these sites and trails[19] indicates growing use by visitors to the region but with area residents remaining by far the dominant users, increasing use of the trails but not necessarily the camping and picnic sites, and extensive use of some sites by visitors during hunting season.

As the Ministry of Forests diminishes its role in managing and maintaining these sites and trails, there has been some interest from recreation clubs to assume those responsibilities for some sites, but very little interest to date from potential commercial operators.

To the extent that SRMMP recreation access and use designations on lands surrounding these sites and trails conforms with the stated objectives of each site and trail, the SRMMP should enhance the value of these crown land assets.

3.2.5 Trans-Canada Trail

The SRMMP states the intent that no provincial crown land will be set aside in the Plan Area for establishing a route for the Trans-Canada trail. The currently publicized route uses Highway 3, Highway 43 and the Elk River Forest Service Road, all of which run along the boundaries of the Plan Area, to reach Elk Pass and the BC/Alberta border.

The proposed Upper Elk Valley route for the trail has been very contentious, with some favouring a dedicated trail adjacent to the Elk River Forest Service Road and others being opposed to any route through the Upper Elk Valley.

North from Elkford, the trail would run 80 kilometres through largely unserviced wilderness, which would not be ideal for the type of bicycle touring that has become popular on other parts of the Trans Canada trail (Kettle Valley railway corridor). A dedicated trail would likely be popular for ATV and snowmobile use, which may attract visitors to Elkford, as well as provide more motorized recreation options for residents.

3.3 Resident Hunting

The SRMMP notes the importance of resident hunting throughout the Kootenay region and in the Plan Area in particular. Although resident hunting effort has declined by half throughout the province since the early 1980's (Appendix 2, Chart 1), as well as in the Plan Area (Appendix 3, Tables 14 and 15), it is still a very popular activity that provides significant net economic value to BC residents.

Table 8 in Appendix 3 provides an estimate of how much resident hunters in the Plan Area would be willing to pay for their hunting experiences over and above the costs that they actually incur (this measure is termed 'consumer surplus' or 'net economic value'). The table shows that in the 2001 hunting season, resident hunters in the Plan Area experienced nearly $2.4 million in net economic value from the activity. Most of this was generated through hunting for Elk, White Tailed Deer and Mule Deer.

The impacts of the SRMMP on resident hunting activity are likely to be a mix of positive impacts emanating from objectives directed at maintaining wildlife populations and controlling motorized access, and negative impacts for some hunters resulting from motorized access restrictions.

---

[19] Neil Shuttleworth, Ministry of Forests, personal communication

The perception of greater control and regulation associated with the RMS should not be a major factor for resident hunters, since most hunting excursions involve advance planning, including consulting local regulations outlined in the Hunting Regulations Synopsis.[20]

3.4 Resident Angling

Most of the angling effort in the Plan Area is focused on rivers and streams, as lakes in the area are small and relatively rare. Cutthroat trout (a blue-listed vulnerable species) and mountain whitefish are the most frequently caught fish species, while bull trout (a blue-listed vulnerable species) is the largest indigenous fish in the area. The rivers and streams in the Plan Area are subject to a variety of seasonal closures, catch & release rules, catch quotas, gear restrictions and boating restrictions.[21]

Crowding in the most popular locations (mid-to-lower Elk River) has been increasing over the past decade, as noted in a recent creel survey for the Elk River. [22] The survey found that angling effort on the Elk River between Sparwood and Elko was comprised of 19% guided anglers and 81% non-guided anglers, and that 99.8% of all fish caught were released. Of the estimated 10,719 anglers, 79% lived outside of B.C. (49% from the United States, 28% from Alberta), with 23% of those living outside B.C. being guided (mostly U.S. residents).

Data in Appendix 2 of this report suggest that BC residents spend about $340,000 on angling in the Plan Area.

The SRMMP states an intent to maintain angling opportunities in the Plan Area, to balance the demand among resident anglers, non-resident anglers and angling guides, and to maintain a quality recreation fishing experience. There are no specific management objectives in the SRMMP to support these intentions, other than those related to access and habitat preservation.

Habitat preservation measures should support fish populations, which will be beneficial to resident anglers. Motorized land based access management restrictions may enhance the angling experience for some anglers, but may limit opportunities for others.

3.5 Backcountry Tourism in the SRMMP Area

The plan area supports a diverse tourism sector from front-country lodges and resorts to a variety of wilderness-related products that depend on the land base and stand to be affected by the SRMMP guidelines. The front-country and backcountry tourism operations are to some degree dependent on each other. Tourists use front-country accommodations as a base from which to access the backcountry, and tourists attracted to front-country operations such as the Fernie Alpine Resort may become aware of, and patronize, backcountry tourism operations.

The SRMMP classifies backcountry tourism into three main product types: Adventure Travel,

---

[20] B.C. Ministry of Water, Land and Air Protection, *Hunting and Trapping Regulations Synopsis 2002 – 2003.*

[21] B.C. Ministry of Water, Land and Air Protection *BC Fisheries, Freshwater Fishing Regulations Synopsis 2003 – 2004.*

[22] Heidt, K.D., *Elk River Creel Survey 2002*, prepared for BC Ministry of Water Land and Air Protection, Cranbrook, B.C., page 19.

Hunting/Guide-Outfitting, and Angling/Guiding. There are about 70 backcountry tourism operators in and around the Plan Area, including 11 hunting guide outfitters and 21 guided angling operations.[23] The socio-economic contribution of those operators is detailed following and in Appendix 3.

3.5.1 Adventure Travel Commercial Operators

Adventure travel operators in the SRMMP area are important contributors to the regional economy, although their socio-economic impacts are considerably less significant than the public recreation sector. There are an estimated 30 to 40 adventure travel operators in and around the Plan Area, with about 15 of these having commercial recreation tenures. These operators generate about $5.2 million in gross revenues (the majority of which flow from Island Lake Lodge's operations) and yield an estimated $395,000 in net economic value to the province (see Appendix 3 for details of these estimates).

The public review draft SRMMP makes various statements of intent relating to tourism, including increasing the length of stay and yield, reducing conflicts between resource users, and managing growth to help minimize environmental impacts. The only resource management objective specific to tourism in the SRMMP is to discourage helicopter dependent commercial tenures. This objective may be very significant in limiting the range of products offered by adventure travel operations.

The SRMMP specifies that existing commercial tenures will be 'grand fathered' where they do not conform to the Recreation Management Strategy. This may confer an exclusivity benefit on operators offering motorized activities in non-motorized zones, but the extent of nonconforming tenure has not yet been analysed. In general, the recreation access management provisions in the SRMMP should benefit commercial recreation operators, providing for marketing and delivery of a more consistent recreation experience. Restrictions on motorized activity in the Plan Area in the summer period will limit the products and experiences that can be offered.

The SRMMP discourages backcountry lodge development, for which there appears to be some potential. Existing lodge and cabin sites will likely benefit, as they become more fully utilized.

3.5.2 Guide-Outfitting

There are eleven mutually exclusive guide-outfitting tenures in the SRMMP area, covering the entire Plan Area except landscape unit C23. The SRMMP specifies that there will be no new guide-outfitting tenures created in the Plan Area, and no expansion of tenures to landscape unit C23. Other elements of the SRMMP which impact guide-outfitting include the Recreation Management Strategy and Conservation measures to preserve and enhance wildlife habitat and populations.

Appendix 3 provides a description of the guide-outfitting industry in the Plan Area, and some measures of its socio-economic significance. The eleven guide-outfitters (whose territories extend beyond the Plan Area in many cases) generate about $2.2 million in gross revenues, 33 person years of employment, $235,000 in direct government revenues and an overall net economic value to the province of about $400,000 per annum.

---

[23] Jamieson, B., D. Brooks et al, page 47.

The SRMMP is expected to have a very positive impact on existing guide-outfitting operations, by enhancing wildlife populations and controlling motorized public access to guide-outfitting territories. Depending upon how the market demand for wilderness, non-motorized hunting excursions evolves, the positive impacts of access management on future operations may be enhanced or muted.

Restrictions on the development of backcountry recreation and tourism facilities, coupled with the ability to upgrade or replace existing structures, should increase the value of guide-outfitting lodges and cabins (or their sites) in the Plan Area.

3.5.3 Guided Angling

There is a provincial review underway of angling and fishing effort in the East Kootenay area. The intent of the provincial review is to license and ultimately limit guided angling effort for certain fisheries.

Extrapolating data from the Elk River Creel Survey[24], Appendix 3 to this report derives an estimate of total gross angling guide revenues to BC guides of $1.2 million in the Plan Area. In addition to this there is an unknown amount of illegal guiding activity by out of province guides. Guided angling occurs primarily on the Elk River, but there is also some use of the Bull, Wigwam and Flathead Rivers.

The public review draft SRMMP states the intent to reduce the level of angling guide pressure within the Plan Area to maintain viable angling guide businesses, sustain fisheries and the angling experience, and balance the demand among resident anglers, non-resident anglers and angling guides. There are no specific management objectives in the SRMMP to accomplish this intent.

Provisions in the SRMMP to conserve and enhance fish habitat should be beneficial to angling guides' businesses. Motorized access restrictions in some areas will have either a positive or negative impact on angling guides, depending on the experience they are trying to market. It is unclear whether heli-aided, guided angling trips will be permitted in the Plan Area.

3.6 Assessment of SRMMP Impacts on Backcountry Recreation and Tourism

The following table summarizes the influences of the SRMMP on backcountry recreation and backcountry tourism for each major activity. The table indicates aspects of the SRMMP guidelines that may stimulate or frustrate each activity, and then presents a judgement on whether the net impacts on commercial operators and recreationist/adventure tourists are positive or negative.

---

[24] K.D. Heidt, *Elk River Creel Survey 2002 - Quality Waters Strategy*, BC Ministry of Water, Land and Air Protection, 2002.

Table 5 Assessment of SRMMP Impacts on Backcountry Recreation and Tourism

	Stimulate Activities	Frustrate Activities	Net Impact on:	
			Commercial Operators/ Tourism	Recreation
Snowmobiling Popular destination for snowmobiling; strong interest in acquiring commercial tenures	+ Certainty of access reduces conflict	- Reduced access in some areas may discourage snowmobilers (Flathead, Wigwam, Upper Elk Valley)	Neutral	-
Ski Touring Popular destination for ski-touring	++ Should enhance activities by providing non-motorized areas; increase quality of experience by eliminating conflicts with motorized recreation	- concentration of motorized users increases in some areas, restrictions on heli-aided experience	+	+
ATVs, Motorbikes Popular activity for local residents; used in conjunction with other recreation activities such as hunting, berry picking, wood gathering, and general access to backcountry.	+ Marginal positive impact by designating roaded areas where ATVs and motorbikes are clearly permitted.	- - Significant negative impacts associated with closed areas; restriction to roads reduces range of experiences; no off road 'play' areas; crowding ATVs into selected areas may increase conflicts and operating risks in those areas	-	- -
Mountain Biking	+ + Should enhance activities by providing non-motorized areas. Increase quality of experience by eliminating conflicts with motorized recreation.	- Restrictions on heli-aided commercial recreation reduces the range of potential experiences.	+	+
Hiking/ Wildlife Viewing including Photography	+ + Restrictions on motorized use should enhance experience. Protection of wildlife habitat should maintain or increase wildlife populations	- Motorized use and access restrictions may limit opportunities, particularly for the less physically capable.	+ +	+
River Rafting, Canoeing, Kayaking		- Possibly some impacts from access restrictions.	Neutral	Neutral
Heli-skiing		- Heli-skiing operations will not be permitted, but potential for activity is not considered to be high	-	?
Cat-skiing	+ Motorized access restrictions reduce potential conflicts for existing operators	- Motorized use and access restrictions may reduce opportunities for new operators	Neutral	N/A
Heli-Hiking		- - Commercial heli-hiking operations will not be permitted, pre-empting some potential for commercial operations. Impacts on independent recreation charters are not clear.	- -	?

	Stimulate Activities	Frustrate Activities	Net Impact on:	
			Commercial Operators/ Tourism	Recreation
Horseback Trail Riding	+ + Motorized access restrictions will enhance trail riding experience	- Restrictions on motorized access may limit opportunities to get to trail heads in some areas	+ +	+ +
Caving Tours; Fossil Gathering and Fossil Tours		- Restrictions on motorized access may limit opportunities in some areas	-	-
Botanical Forest Products (e.g. berry and mushroom picking); Wood Gathering; Rock Hounding & Recreational Prospecting		- Restrictions on motorized access may limit in some areas	N/A	-
Camping at Recreation Sites	+ Motorized access restrictions will enhance experience at non-motorized sites and trails		+	+

SUMMARY OF SOCIO-ECONOMIC IMPACTS OF THE PLAN ON **BACKCOUNTRY RECREATION**:

- The SRMMP restrictions will positively impact non-motorized activities throughout the year. Activities will have dedicated non-motorized areas, but can also continue to use areas that allow motorized access.
- The restrictions on summer motorized access will have negative impacts on certain activities such as botanical forest product gathering, wood gathering, and for recreational users who are seniors, handicapped, or young families who cannot easily access the backcountry.
- The restriction of heli-aided activities reduces the range of experiences available to recreationists.
- The negative aspects of access restrictions imposed by the public review draft SRMMP will be more pronounced for resident recreationists, whose activities tend to be more spontaneous, than for commercial tourism operators.

OVERALL SOCIO-ECONOMIC IMPACT: **POSITIVE**

SUMMARY OF SOCIO-ECONOMIC IMPACTS OF THE PLAN ON **BACKCOUNTRY COMMERCIAL TOURISM OPERATORS**:

- The Recreation Access Management zoning is generally beneficial to commercial tourism operators, in enhancing their ability to deliver a consistent experience to clients.
- The restrictions on motorized access are not as constraining to commercial operators, as they can more easily choose where to operate.
- Constraints on heli-aided commercial tourism operations reduce the options available to commercial adventure tourism developers.
- Restrictions on backcountry lodge development may preclude some significant market opportunities, and/or confer benefits on existing lodge and cabin owners.

OVERALL SOCIO-ECONOMIC IMPACT: **POSITIVE**

3.7 *Assessment of SRMMP Impacts on Hunting and Angling*

	Stimulate Activities	Frustrate Activities	Net Impacts
Guided Angling	+ Experience enhanced by maintaining fish habitat and restrictions on motorized access	- Restrictions on motorized access may limit opportunities in some areas. Impacts on heli-aided angling trips unclear. - Stated intent to ration guided angling activity in some areas	Neutral (stated intent to ration guiding activity is not backed by specific management objectives in SRMMP)
Resident Angling	+ Experience enhanced by maintaining fish habitat and restrictions on motorized access. + Intent to ration guided angling activity.	- Restrictions on motorized access may limit opportunities in some areas for some anglers	Neutral (stated intent to ration guiding activity is not backed by specific management objectives in SRMMP)
Guided Hunting	++ Motorized use and access restrictions will enhance guided horse hunting experience. Habitat preservation and restrictions on human disturbance should help to maintain wildlife populations	- Restrictions on motorized access may limit the ability of some operations to adjust to future changes in product demand	+ (may be very positive if market for non-motorized, wilderness hunting experience remains strong and supply diminishes elsewhere)
Resident Hunting	+ Restrictions on motorized use and access may enhance experience for some hunters. Habitat preservation and restrictions on human disturbance should help to	- Restrictions on motorized use and access will limit hunting opportunities for some hunters	Undetermined (no indicators of the relative popularity of non-motorized versus motor-aided resident hunting)

	Stimulate Activities	Frustrate Activities	Net Impacts
	maintain wildlife populations		

4 Assessment of Plan Impacts on Agriculture and Trapping

4.1 Agriculture

Cattle ranching is the most common form of agriculture in the Plan Area, and access to crown lands for grazing is crucial to the viability of these operations. The Socio-Economic Base Case estimates that there are 5 ranchers grazing livestock in the Plan Area[25].

Suitable grazing land is a very scarce resource in the Plan Area[26], which results in competition between domestic livestock and wildlife for forage opportunities. Objectives 5.0.1 through 5.0.4 (which follow direction from the EKLUP and KBLUP-IS) restrict expansion of livestock grazing, while some of the statements of Intent support enhancing forage production from existing range lands.

The potential for other forms of agricultural production in the Plan Area appears to be very limited by the growing season, terrain, and soil conditions.

The SRMMP offers little potential to expand livestock grazing opportunities on crown lands, but does support more intensive management of existing range lands to increase forage production. The overall impact of the Plan on agriculture in the Plan Area is assessed as neutral.

4.2 Trapping

There are about 25 licensed traplines, either entirely or partially within the Plan Area. The average gross income from a trap line is estimated at about $2,500 per annum[27], for a total industry gross revenue of $62,500 per annum. There appears to be potential for trapping revenue to increase on existing traplines through increased trapping effort.

Management Objective 6.0.1 of the SRMMP restricts the number of licensed traplines in the Plan Area to 24, or approximately the current number. Conservation measures within the Plan to maintain or enhance wildlife habitat and populations should be beneficial to the trapping industry. Motorized recreation access restrictions (which do not apply to licensed trappers) should also be beneficial in reducing potential disturbance to trapline operations. The overall impact of the Plan on trapping in the Plan Area is assessed as positive.

---

[25] Holeman,Gary and Pierce Lefebvre Consulting, 2002, Pg. 55

[26] Under the Canada Land Inventory classification system, on a scale of 1 (best) to 7 (worst) a large majority of the Plan area lands are classified in the Class 4 to Class 7 range for both agriculture potential and ungulate capability. See http://geogratis.cgdi.gc.ca/cgi-bin/geogratis/cli/ungulates.pl.

[27] Bill Warkenton, WLAP.

5 Assessment of Plan Impacts on First Nations

The entire SRMMP Plan Area falls within the Ktunaxa Nation's Traditional Territory. The Ktunaxa are currently at Stage 4 of the 6-stage Treaty Process, which is neither limited, nor intended to be limited, by the SRMMP.

The Ktunaxa have expressed concern about their limited capacity to effectively participate in the planning process, and do not consider the consultation that occurred prior to publication of the draft plan to be meaningful or adequate.

The Socio-Economic Base Case for the SRMMP noted some of the interests and concerns expressed by Ktunaxa representatives at the outset of the planning process, including:

- Support of environmentally sensitive timber harvesting and a desire to become more involved in the forest industry,
- The impacts of logging operations on fish and wildlife,
- The need to integrate timber harvesting with other sectors such as tourism, trapping, hunting, fishing and other traditional, spiritual and commercial uses, and
- The need to preserve archaeological and cultural sites.

The SRMMP states the intent to provide for cultural, economic and environmental interests of the Ktunaxa, and to continue to pursue consultation with the Ktunaxa Nation.

In the course of this assessment, no effective facility or mechanism was established to gather information on how the SRMMP may impact the interests of the Ktunaxa Nation, and no assessment of those impacts is therefore attempted.

6 Assessment of Plan Impacts on Settlements

The SRMMP has the general objective of reinforcing the Highway 3/43 settlement corridor and discouraging settlement elsewhere in the Plan Area. With populations declining in the Plan Area over the past 20 years, there is limited pressure to open new settlement areas, or expand the existing ones, with the exception of the recent expansion of Fernie and the Fernie Alpine Resort ski area. Census population data do not capture the emerging 'shadow population' in the Elk Valley[28], associated with recreational property demand and the 4-on,4-off shift rotation at the coal mines. This 'shadow population' is driving much of the demand for new housing and new housing types in the Elk Valley, and the number of private occupied dwellings is rising in all three communities, in spite of Census population declines.

All three of the major communities adjacent to the Plan Area are very dependent upon the coal mining industry for direct employment opportunities, indirect economic activity, social infrastructure and municipal tax base. Forest industry impacts are also significant in Sparwood and Fernie, and particularly the community of Elko (unincorporated) to the west of the Plan Area.

The decline in coal sector employment over the past 15 years brought some urgency to diversification strategies initiated by Fernie (founded in 1898), Sparwood (incorporated in 1966) and Elkford (incorporated in 1971)[29]. A key component of these strategies is the development of tourism potential, which is the focus of a Tourism Opportunity Strategy currently being developed for the Southern Rocky Mountain Area[30].

Fernie has had the greatest degree of diversification success to date, building upon the rapid expansion of the Fernie Alpine Resort (330,000 skier days in 2001/2002 season[31]). The Socio-Economic Base Case for the SRMMP[32] noted some indications that the growth in tourism employment (+48%) evident in the 1981 to 1996 labour force data, has accelerated since 1997 with the expansion of the Fernie Alpine Resort. Recently released 2001 Census Canada labour force data confirm this trend, with the Accommodation & Food Services labour force surging ahead by 77% (from 280 to 495)[33] between 1996 and 2001 in Fernie, while remaining constant in Sparwood and Elkford.

Impacts of the SRMMP will be felt in Fernie, Sparwood and Elkford, but also in Elko, Jaffray, Tobacco Plains Reserve and other Rocky Mountain Trench communities to the west of the Plan Area. Cranbrook, as the administrative centre, forest industry centre and air access gateway for the southeast Kootenay region, also relies to some extent on the timber resources, wilderness attributes and abundant wildlife populations of the Plan Area.

In general, coal industry impacts from the SRMMP will be experienced in Fernie, Sparwood and

---

[28] Jamieson, B., D. Brooks et al, 2003.

[29] For example see Crane Management Consultants, *Elk Valley Economic Development Implementation Strategy*, prepared for BC Ministry of Small Business, Tourism and Culture, 1994

[30] Jamieson, B., D. Brooks et al, 2003

[31] Melody Kultgen, Fernie Alpine Resort, personal communication.

[32] Holman, Gary and Pierce Lefebvre Consulting, 2002

[33] BC Stats, from 2001 Census Canada data. The change in industrial classification systems employed for labour force data between the 1996 Census and the 2001 Census makes comparisons of other sectors difficult, but the Accommodation and Food sector corresponds well between the two classification systems.

Elkford, and forest industry impacts in Elko, Jaffrey and Cranbrook. The SRMMP adds some certainty of access to resources for the mining and forest industries, which should result in some increase in confidence in the basic viability of the affected communities. This impact will likely be difficult to detect, however, in the face of the many other regulatory, operating and market uncertainties faced by these industries.

SRMMP impacts on recreation and tourism will be felt in all of the communities mentioned above. The impacts on resident recreation will largely reinforce the lifestyle choices made by the existing populations in these communities. It appears as though past patterns of recreational use and activity have been defended in the Plan, in the face of new motorized technologies that threaten to erode the enjoyment of these activities in many areas.

Elkford appears to be the most vulnerable of these communities, with its almost total economic reliance on the coal mining industry, and its location well off of the Highway 3 tourism corridor. Elkford is the least likely to capture spin-off tourism activity associated with Fernie based tourism development, and along with Sparwood suffers a substantial amount of leakage of economic activity to Alberta communities[34].

The SRMMP management objectives should not have any significant impact on Elkford's industrial base, but they may reduce the already limited options for tourism development. The Recreation Management Strategy is quite restrictive with respect to motorized and helicopter access in the Elkford area. While this may enhance opportunities for non-motorized tourism and recreation, and may have significant ecological benefits, these benefits likely come at the cost of reducing motorized recreation activities. As noted earlier, however, Elkford has difficulty capturing the economic benefits of recreation activity. There is not sufficient information available on the net socio-economic value of motorized and non-motorized activities (net of any ecological costs) to evaluate this trade-off, particularly with the economic 'leakage' complication.

---

[34] Jamieson, B., D. Brooks et al, 2003,Pg. 18

7 Summary and Conclusions

In general, the public review draft SRMMP appears to facilitate economic activity, while balancing social concerns related to outdoor recreation, by:

- Delivering tangible degrees of certainty of access to crown land resources for extractive industries, which anchor the economies and basic viability of adjacent communities;
- Zoning the SRMMP land base to accommodate a variety of outdoor recreation activities and commercial tourism operations;
- Maintaining wilderness and wildlife values supporting the guide outfitting industry and recreational hunting; and
- Maintaining fish habitat supporting the guided angling industry and recreational angling.

By sector and/or activity, the Plan impacts are assessed as follows:

SRMMP Impact	Sector or Activity	Socio-Economic Significance in Plan Area	
		Current	Potential
Very Positive	Guide Outfitting	Modest	Modest
Positive	Metal and Mineral Exploration	Minor	Modest
	Metal and Mineral Mining	None	Modest
	Conventional Oil & Gas	None	Modest
	Coal Bed Methane	Minor	Substantial
	Forest Industry	Substantial	Substantial
	Guided Angling	Modest	Modest
	Trapping	Minor	Minor
	Non-Motorized Resident Backcountry Recreation	Substantial	Substantial
	Backcountry Adventure Travel Operators	Modest	Modest
Neutral	Coal Exploration and Mine Development	Minor	Substantial
	Coal Mining	None	Substantial
	Agriculture	Minor	Minor
Negative	Motorized Summer Resident Backcountry Recreation	Modest	Modest
	Recreational Snowmobiling	Modest	Substantial
	Heli-Aided Commercial Recreation	None	Modest
	Heli-Aided Resident Recreation	Minor	Modest
	New Backcountry Lodge Development	None	Modest

- Impacts are assessed as neutral or positive for most sectors or activities judged to have a substantial current or potential socio-economic impact. The exception is recreational snowmobiling, which is thought to have substantial potential socio-economic impact, but will experience somewhat negative impacts from the SRMMP on balance.

- Negative impacts relate primarily to potential recreation or tourism activities that are not well established in the Plan Area.

- With respect to the tourism and recreation sectors the SRMMP appears to be oriented more toward "maintaining" existing economic and social activity patterns, than providing for new economic activities and social diversity. For example:

  - The Plan is very restrictive for summer motorized recreation;
  - The Plan forecloses on the likely modest opportunities to develop helicopter aided adventure tourism; and
  - The Plan is very restrictive with respect to developing backcountry lodges.

  These restrictions may have justification in supporting ecological or other socio-economic values, but it is important to note that they are not without cost.

- The Plan may confer unintended benefits on 'grand fathered' commercial recreation tenure holders whose licensed activities do not conform to the Recreation Management Plan zoning contained within the SRMMP.

- Plan restrictions on new backcountry lodges may confer unintended benefits on the owners of existing backcountry lodges and cabins that can be upgraded or replaced.

Appendices 5 and 6 summarize the socio-economic significance of the various industrial and recreational activities that take place in the Plan Area, and the SRMMP impacts on those activities.

APPENDIX 1 SRMMP MAJOR INDUSTRIAL SECTORS

The Socio-Economic Base Case for the Southern Rocky Mountain Management Plan (SRMMP) presents data on each major industrial sector. It is now becoming customary to assess socio-economic impacts associated with industrial development and other values based on 'net economic value'. According to MSRM guidelines, the net economic value from commercial sectors should consider[35]:

- **Public Sector Rent**: Government resource tax revenues are often used as a proxy for economic rents, for example stumpage revenues for the forest industry and oil and gas royalties and bonus bids in the case of the petroleum industry. In these instances, the government resource tax revenues are assumed to reflect product market prices less production costs (including a reasonable return on capital).

- **Rent Captured by Direct Labour**: Rent may accrue to labour, due to various labour market rigidities and "imperfections". Rent accruing to labour is very difficult to estimate and is perhaps best approximated by some fixed percentage of total direct labour costs for each sector.

- **Private Sector Rent Captured by Owners of Capital**: Rent may accrue to entrepreneurs who own or employ factors of production that are in relatively fixed supply. These rents are also very difficult to estimate, and can perhaps be best estimated by a percentage of total sales.

This Appendix summarizes key socio-economic impacts associated with the mining and forest sectors as presented in the Socio-Economic Base Case document, and estimates the net economic value from those two sectors based on those impacts.

Appendix 1-1 Mining Sector

Table 6 Mining Sector Employment, Industry Taxes and Net Economic Value

Mining Sector Employment Impacts	Multiplier	Total PYs	Annual Employment Income ($million)
Direct			
Coal Mining (outside SRMMP)		2,563	$169.9
Exploration (small portion of which is in SRMMP)		50	$2.5
Total Direct	1.00	2,613	$172.4
Indirect & Induced			
Regional	0.61	1,594	$54.3
Outside Region, within B.C.	0.69	1,803	$61.4
Sub-total Indirect & Induced	1.30	3,397	$115.7
Total B.C. Impacts	2.30	6,010	$288.2
Regional Impacts – Direct, Indirect and Induced	1.61	4,207	$226.7

---

[35] MSRM, *Socio-Economic and Environmental Assessment for Land and Resource Management Planning in British Columbia: Guiding Principles*, Draft for Discussion Purposes, January 2003.

Mining Sector Industry Taxes (B.C. and Municipal)	Annual $ Million
Mining and Mineral Taxes	$7.4 million
Property Taxes to Elkford, Fernie and Sparwood	$6.9 million
Other Industry Taxes (e.g. capital, income, sales, fuel taxes, etc.)	$16.9 million
Total	$38.6 million

Net Economic Value from Mining - Coal Mining and Mineral Exploration	Estimated Annual Net Economic Value
• Public Sector Rent (includes mining and mineral taxes)	$7.4 million
• Labour Rent (5% of direct wages and salaries)	$8.6 million
• Industry Rent (minimal)	Minimal
Total	$16.0 million

Notes: May not add due to rounding.

1. Total industry taxes are from the Socio-Economic Base Case Document and are based on the PriceWaterhouseCoopers report titled *The Mining Industry in British Columbia – 2000*; Property taxes are from discussion with industry.
2. Coal industry revenues are estimated at $750 million based on $30 per tonne (average price in 2000) and a production rate of approximately 25 million tonnes for the East Kootenay mines in 2000 (from Socio-Economic Base Case document).
3. Industry rents over and above normal returns are assumed to be minimal since between 1991 and 2000, the B.C. mining industry reported losses in 6 of the 10 years, therefore yielding an overall negative after tax return on shareholders' investment over the 10 years, therefore below what would be considered a "reasonable return on capital"; Source: PriceWaterhouseCoopers, 2000.

Source: Socio-Economic Base Case for the SRMMP, Appendix 2.

The net economic value of coal mining includes the five mines located just outside the Plan Area including Line Creek, Fording River, Coal Mountain, Greenhills and Elkview. The Net Economic Value from mining flows to the communities of Elkford, Sparwood and Fernie.

Appendix 1-2 Forestry Sector:

Primary forest products processing in the Cranbrook TSA generates 922 Person Years of employment (PYs). This translates to 0.52 PYs per 000 m3 harvested, which when added to timber harvesting and silviculture employment adds to 0.93 PYs per 000 m3.

Table 7 Forest Sector Industry Taxes, Employment and Net Economic Value

Timber Harvesting Land Base & Estimated Annual Timber Volume	Cranbrook Region	Cranbrook TSA	Plan Area
Timber Harvesting Land Base		407,058	78,179
Percentage			19.2%
Timber Volume	1,219,000	871,000	167,283

Government Revenues		Annual Revenues ($Million) Attributed to:		
	$ per m3	Cranbrook TSA	Plan Area	
Stumpage and Related Payments	$16.45	$14.33 Mil	$2.75	Million
Other Forest Industry Taxes (logging taxes, income, capital, property, sales, and other)	$8.12	$7.07 Mil	$1.36	Million
Total	$24.57	$21.40 Mil	$4.11	Million

Forest Industry Employment Impacts - Primary Processing	Cranbrook TSA Log Input (000 m3)	Employment (PYs) (1)	Allocated PYs (1)	PYs/000 m3
Tembec Cranbrook		75		
Tembec Elko	910	223	293	0.322
Tembec Head Office		80		
Galloway Lumber	210	89	89	0.423
Smaller Operations	98.5	80	80	0.812
Total – Primary Processing	1,219	547	462	0.379
Secondary Processing:				
Tembec Pulp Mill: Skookumchuck		375		0.14
Sub-Total (2)		922		0.52
Other:				
Timber Harvesting				0.36
Silviculture				0.05
TOTAL PYs per m3				0.93

Forest Industry Impacts from Cranbrook TSA & SRMMP	Employment Coefficient, PYs per 000 m3	PYs Attributed to Cranbrook TSA	PYs Attributed to Plan Area	Annual Plan Area Income ($ million)
Direct Forest Products	0.93	809.2	155.4	$7.2
Indirect & Induced				
Regional	0.49	427.2	82.0	$2.8
Outside Region, within B.C.	0.68	590.4	113.4	$3.9
Sub-total Indirect & Induced	1.17	1,017.6	195.4	$6.7
Total Direct & Indirect	2.10	1,826.8	350.9	$13.9

Annual Net Economic Value		Cranbrook TSA $ Million	Plan Area $ Million
Public Sector Rent	$16.45 per m3 (stumpage)	$14.33	$2.75
Labour Rent	5 % of direct wages and salaries	$1.9	$0.4
Industry Rent	Minimal	Minimal	Minimal
ANNUAL NET ECONOMIC VALUE		$16.23	$3.15

Notes: May not add due to rounding

1. Some of the employment in Cranbrook is to reprocess wood that is manufactured in other Timber Supply Areas. The allocated PYs represent the wood processing employment that is assumed to depend on the fibre processed in the area (log input of 1.2 million m3). The Socio-Economic Base Case provides more detail on the assumptions that pertain to these estimates.
2. Employment excludes 37 PYs at the Cranbrook value-added mill.
3. Industry rents are considered minimal; between 1995 and 1999, the B.C. forest industry reported total earnings before taxes that averaged 0.8% of total sales revenues and a 5-year average return on capital of 2.9%, which is below what might be considered a "reasonable average return". PriceWaterhouseCoopers, *The Forest Industry in British Columbia, 1999.*

Source: Socio-Economic Base Case for the SRMMP, Appendix 2.

APPENDIX 2 BACKCOUNTRY RECREATION

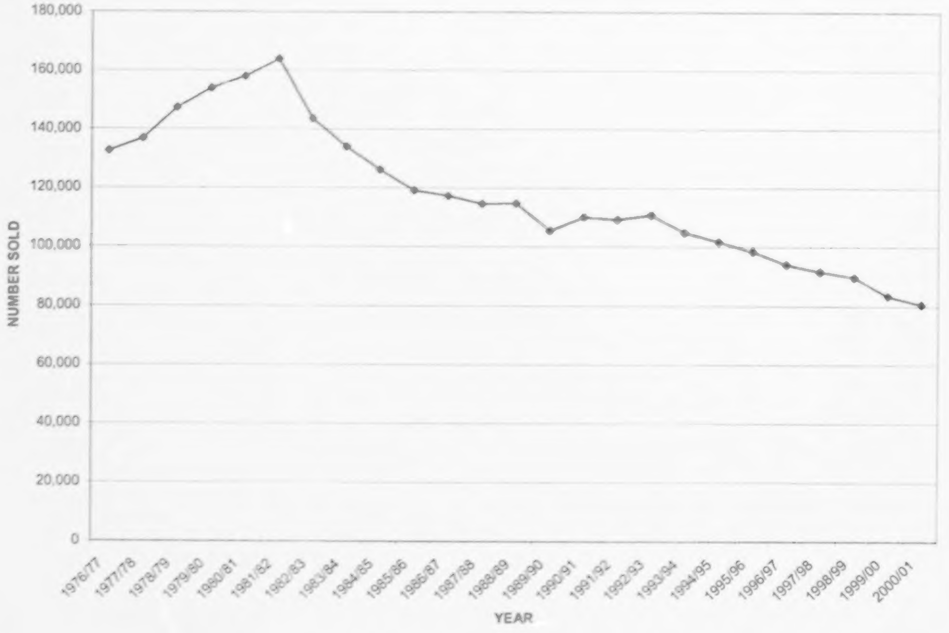
This Appendix reviews the socio-economic impacts associated with four major types of backcountry recreation including resident hunting, resident angling, wildlife viewing and snowmobiling.

Appendix 2-1 Resident Hunting

Large populations of several big game species have supported a long history of recreational and sustenance hunting in the SRMMP area. Hunting for elk, white tailed deer and mule deer accounts for about 85% of the hunting effort (hunter days) by BC residents in Wildlife Management Units that are entirely or partially within the SRMMP area (see Table 8).

The number of resident hunters and total hunting effort has been declining in the SRMMP area, and the province, since the early 1980s (Tables 14, 15, and Chart 1). Data from the BC Ministry of Water Land and Air Protection[36] indicate that the animal harvest and hunting effort by resident hunters declined substantially between 1984 and 2001. Comparing annual averages for the ten year period 1984 to 1993 (Table 14) with annual averages for the three year period 1999 to 2001 (Table 15), total animals killed fell from 2,545 per year to 1,122 per year (56% decline). Total hunter days (which is inflated through double counting when summed across species and management units) fell from 83,478 per year in the earlier period to 46,310 in the later period (45% decline). Most of this decline can be attributed to declines in elk, mule deer and moose hunting.

Chart 1 BC Resident Hunting License Sales 1976 - 2001



---

[36] BC Ministry of Water Land and Air Protection, Wildlife Allocation and Use Section, *Summary Statistics Data Base*, Victoria, 2001.

The 1995 BC Resident Hunter Survey[37] provided estimates of the value of resident hunting by species and geographic region. This survey used a contingent valuation method in conjunction with a survey of actual expenditures to determine the net economic value or consumer surplus associated with resident hunting activities. The table below reports the results for big game species hunted in the SRMMP area.

Table 8 Hunting Effort, Expenditures and Net Economic Value for the SRMMP Area

	Hunter Days 2001 Season[1]	Actual Expenditures/Day[2] ($2002)	Net Econ. Value/Day[3] ($2002)	Total Expenditures ($2002)	Total Net Economic Value ($2002)
Elk	14,485	$54.74	$52.56	$792,909	$761,318
White Tailed Deer	15,007	$38.68	$47.97	$580,470	$719,880
Mule Deer	10,284	$45.23	$48.51	$465,145	$498,944
Moose	339	$52.45	$53.65	$17,781	$18,188
Grizzly Bear	109	$118.77	$94.41	$12,946	$10,259
Goat	898	$112.66	$58.57	$101,169	$52,594
Mountain Sheep	1,740	$105.44	$88.18	$183,466	$153,461
Cougar	764	$92.00	$82.06	$70,288	$62,721
Black Bear	2,682	$63.59	$37.81	$170,548	$101,410
Total All Species[4]				$2,394,722	$2,378,774

Notes:

1. Source: *Summary Statistics Data Base*, BC Ministry of Water Land and Air Protection, Wildlife Allocation and Use Section, Victoria; Wildlife Management Units 4-1, 4-2, 4-22, 4-23
2. Source: Roger Reid, *British Columbia Resident Hunter Survey 1995*, BC Ministry of Environment, Lands and Parks, Table 11. BC average estimated expenditures by species hunted, converted to $2002 using the Statistics Canada all items consumer price index for BC.
3. Source: Roger Reid, *British Columbia Resident Hunter Survey 1995*, BC Ministry of Environment, Lands and Parks, Table 17. Kootenay region average net economic value by species hunted, converted to $2002 using the Statistics Canada all items consumer price index for BC. Net economic value is consumer surplus measured through a contingent valuation method survey.
4. Total All Species may include some double counting, as many hunters hunt for more than one species at a time.

Appendix 2-2 Resident Angling

There is very little information available on the economic and social significance of resident angling activities in the Plan Area. Data from the Federal Department of Fisheries and Oceans 1995 National Survey of Recreational Fishing[38], indicates the following:

- 1995 freshwater angling effort in BC was 6,288,031 angler days.
- 13% of the effort (815,000 angler days) occurred in the Kootenay region.

---

[37] B.C. Ministry of Environment, Lands and Parks – Wildlife Branch, *The Economic Value of Resident Hunting in British Columbia, 1995*, Victoria.

[38] Joint BC Government-Sector Steering Committee, *BC's Freshwater Recreational Fishery: Setting Direction For The Future – Context Report*, 2002, pg. 19 and 20.

- Resident anglers accounted for 79% (645,000 angler days) of angling effort in the Kootenay region.
- Expenditures in BC on freshwater fishing in 1995 included $274 million in capital expenditures (gear, boats, vehicles, etc.), and $207 million in direct expenditures (accommodation, food, travel, rentals, fishing packages).
- The Kootenay region share of 1995 expenditures was 10% of capital expenditures ($27.4 million), and 13% of direct expenditures ($27 million).
- BC residents accounted for 96% of capital expenditures ($26.3 million), and 77% of direct expenditures ($20.8 million) in the Kootenay region.

The implied expenditures per resident angler day in the Kootenay region (from the third and sixth bullets above) are $40.78 in capital expenditures, and $32.25 in direct expenditures for a total of $73.03.

According to BC Ministry of Land, Water and Air Protection fishing licence data[39], the number of adult anglers in BC has remained relatively stable at about 300,000 BC residents and 80,000 non-residents over the past ten years.

More recent, and much more specific data are contained in a creel survey conducted in 2002 for the Elk River[40] (from Sparwood to Elko), the most popular sport fishery in the Plan Area. Data from the creel survey include the following:

- 10,719 angler days between July 1 and October 31, 2002.
- Non-guided anglers accounted for 8,697 angler days (81%) and guided anglers, 2,022 angler days (19%).
- BC residents accounted for 2,201 angler days (20.5%). The rest were Alberta residents 2,956 angler days (27.6%), US residents 5,265 angler days (49.1%) and Other 297 angler days (2.8%).
- Drift boat anglers accounted for 69% of angler days, 88% of angler hours and 89% of fish caught.
- 88% of fishers on the Elk River rated the quality of their angling experience as either Good (75%) or Excellent (13%).

The 2000 Survey of Recreational Fishing in Canada – Preliminary Results[41] shows the following values for expenditures on recreational fishing in BC:

- BC residents spent $299,832,369 (direct and capital) on recreational fishing in BC over 3,928,738 angler days, for an average of $76.32 per angler day.

---

[39] Ibid, pg.17.

[40] K.D. Heidt, Elk River Creel Survey 2002 – Quality Waters Strategy, BC Ministry of Water, Land and Air Protection, Cranbrook, 2002.

[41] Federal Department of Fisheries and Oceans, *Survey of Recreational Fishing in Canada, Preliminary Results,* http://www.dfo-mpo.gc.ca/communic/statistics/RECFISH/new2002/sum2000_e

- Other Canadians spent $22,119,981 (direct only) on recreational fishing in BC over 212,131 angler days, for an average of $104.28 per angler day.
- Non-Canadians spent $56,038,125 on recreational fishing in BC over 261,129 angler days, for an average of $214.60 per angler day.

Applying 2000 national survey expenditure results for BC, to the Elk River fishery activity levels determined by the creel survey yields the following expenditure estimates:

Table 9 Recreational Fishing Expenditures in the Elk River, 2002

Place of Residence	Angler Days	Expenditure/Day	Total Expenditures
BC (direct and capital)	2,201	$76.32	$170,000
Other Canadian (direct)	3,145	$104.28	$330,000
Non-Canadian (direct)	5,373	$214.60	$1,150,000
Total	10,719		$1,650,000

Other popular fishing locations in the Plan Area include Wigwam River, Bull River, Lodgepole Creek, Flathead River and the Elk River north of Sparwood.

If one assumes that the Elk River (Sparwood to Elko) fishery attracts one third of the BC resident fishing effort, and two thirds of the Other Canadian and Non-Canadian fishing effort in the Plan Area, then total expenditures on fishing effort in the Plan Area may be as follows:

Table 10 Recreational Fishing Expenditures in the SRMMP Area

Place of Residence	Angler Days	Expenditure/Day	Total Expenditures
BC (direct and capital)	6,603	$76.32	$500,000
Other Canadian (direct)	4,718	$104.28	$490,000
Non-Canadian (direct)	8,060	$214.60	$1,730,000
Total	19,381		$2,720,000

Appendix 2-3 Wildlife Viewing

The SRMMP area supports an internationally reputed concentration and diversity of wildlife species, which can be observed, studied and photographed in a natural, and often spectacular setting. Residents of the area take advantage of this resource through a variety of activities that are either entirely, or partially directed towards viewing wildlife.

No direct measures of the extent of wildlife viewing activities in the Plan Area are available, however a provincial study on the economic value of these activities[42] provides some data from which an indication of the extent and value of these activities can be estimated.

The provincial study identifies three broad types of wildlife related activities: wildlife activities around the home, cabin or cottage; indirect wildlife activities, which are away from the home but incidental to the main purpose of a trip or outing; and direct wildlife activities, which occur away from the home and are the main purpose of a trip or outing.

---

[42] Roger Reid, *The Economic Value of Wildlife Activities in British Columbia, 1996* , BC Ministry of Environment, Lands and Parks, Victoria, 1998.

As part of the study, a household survey requested BC residents to indicate expenditures on the three types of wildlife activities.

Table 11 Expenditures on Wildlife Activities in Kootenay Region and SRMMP Area

Activity Type	Kootenay Region Expenditures[1] \$1996	SRMMP Area Proportion[2]	SRMMP Area Expenditures \$1996	SRMMP Area Expenditures \$2002[3]
Home/Cabin/ Cottage	\$5,196,900	7.5%	\$390,000	\$420,000
Indirect Activities	\$3,506,900	7.5%	\$260,000	\$280,000
Direct Activities	\$21,805,180	7.5%	\$1,635,000	\$1,770,000
Total Expenditures	\$30,508,980	7.5%	\$2,285,000	\$2,470,000

Notes:

1. Source: *Roger Reid, Economic Value of Wildlife Activities in BC 1996*, Tables 18,19 and 20.
2. SRMMP Area Proportion is estimated as an average of 10% of the Kootenay Region population (18 and over) and 5% of the Kootenay Region land area.
3. Adjusted using Statistics Canada consumer price index, BC all items.

While gross expenditures give some indication of the economic impact and value of these activities, a better measure is the net economic value, which estimates net utility of these activities to participants engaging in them. This is measured by estimating how much more people would be willing to pay to engage in these activities, than they actually did pay.

The household survey employed a contingent valuation method to estimate net economic value by region as outlined in the table following.

Table 12 Net Economic Value from Wildlife Activities, Kootenay Region & SRMMP Area

Activity Type	Kootenay Region Net Economic Values[1,2] \$1996	SRMMP Area Proportion[3]	SRMMP Area Net Economic Values[2] \$1996	SRMMP Area Net Economic Values \$2002[4]
Indirect Activities	\$6,251,800	7.5%	\$470,000	\$510,000
Direct Activities	\$77,476,280	7.5%	\$5,810,000	\$6,290,000
Total	\$83,728,080	7.5%	\$6,280,000	\$6,800,000

Notes:

1. Source: *Roger Reid, Economic Value of Wildlife Activities in BC 1996*, Tables 28 and 29.
2. Net Economic Value is consumer surplus, measured through a contingent valuation survey.
3. SRMMP Area Proportion is estimated as an average of 10% of the Kootenay Region population (18 and over) and 5% of the Kootenay Region land area.
4. Adjusted using Statistics Canada consumer price index, BC all items.

The above estimates of expenditures and net economic values indicate that for direct wildlife activities in particular, the net economic value derived from the activity is far greater than its actual cost (for the Kootenay Region, residents spent an average of \$17.40 per recreation day on direct wildlife related activities in 1996, but derived \$44.60 per recreation day in net economic value from the activities)[43].

---

[43] Roger Reid, ibid, Tables 27 and 28.

Appendix 2-4 Snowmobiling

Snowmobiling in the SRMMP area is a popular winter recreation activity for the residents of communities immediately adjacent to the Plan Area, as well as for other Southeast Kootenay residents. Residents of Southwest Alberta also make extensive use of the Plan Area for recreational snowmobiling (day trips).

Organized snowmobile clubs in Fernie (85 members), Sparwood and Elkford maintain trails and tracks, and assist recreational snowmobilers as well as snowmobile tourists in locating trails and 'play areas'.

There are no direct data on snowmobiling participation rates for residents in and around the Plan Area. The Revelstoke Snowmobile Strategy[44] completed in 2002 provides some indication of the levels of snowmobiling activity and expenditures in that area, based on trail head registrations and a survey of riders.

Selected Results from the Revelstoke Snowmobile Strategy Study (2002):

- 68% of riders from Alberta, 15% from elsewhere in Canada, 12% from USA.
- 70% of visitors mentioned 'the snow' as being what they liked most about snowmobiling in the Revelstoke area.
- Over 80% of visitors indicated an awareness of motorized restrictions in the area, and Mountain Cariboo habitat issues.
- Average daily expenditures by visitors were: accommodation and meals $78.39 (39%), snowmobile costs $52.83 (24%), entertainment $50.27 (22%) and miscellaneous $33.13 (15%), for a total of $223.62 per non-resident day.
- An estimated 22,000 non-resident rider days in the Revelstoke area, at an average of $223.62 per day in expenditures, created a local expenditure impact of $4.9 million in the 2001/2002 season.
- Registered trail users increased by 600% over the past decade, and 100% over the past four seasons. Some of this is due to higher registration compliance and enforcement.
- Visitations were projected to increase from 22,000 days to 30,000 days over the next five years.
- The 22,000 visitor rider days are estimated to be 90% of total rider days, with the balance (2,444 rider days) attributed to local riders.

The 2002 population of Revelstoke is estimated at 7,945[45]. The 2,444 local resident rider days estimated above represents 0.3076 rider days per resident. Applying this ratio to the combined population of Elkford, Sparwood and Fernie of 11,786[46] for 2002 yields 3,625 local resident rider days in and around the Plan Area.

---

[44] City of Revelstoke, *Revelstoke Snowmobile Strategy*, 2002, www.cityofrevelstoke.com/edc/snowmobile.
[45] BC Stats, population estimates for BC municipalities.

In addition to resident snowmobilers, there are also independent snowmobiling tourists utilizing the tracks, trails and play areas of the Plan Area. The extent of this activity is not known, but anecdotal information suggests that it is extensive. Included in this category are riders undertaking day trips from staging areas outside of the Plan Area, riders undertaking day trips from staging areas within, or very near the Plan Area, and riders undertaking multiday excursions using accommodations in communities near the Plan Area.

It is unlikely that the Plan Area attracts snowmobile tourists in the numbers noted above for the well established and very popular Revelstoke area, which has aggressively promoted this type of tourism for many years. If the Plan Area attracts one third of the number of snowmobiling visitors attracted to Revelstoke, this would equate to about 7,300 rider days, which is about twice the number of estimated resident rider days.

Estimates of expenditures by snowmobiling tourists range between $85[47] and $225[48] per day. The Revelstoke estimate of $225 per day included only those who stayed overnight. Several people contacted during the course of this assessment indicated that the Elk Valley area has difficulty capturing the economic benefits of visitors, especially those from Alberta, due to its location near the BC-Alberta border. The lower cost structure (petroleum taxes, PST) in Alberta entices many to make as many of the required expenditures as possible on the Alberta side of the border.

Applying the low end of the expenditure range ($85 per day) to 7,300 rider days yields $620,000 per annum in possible independent snowmobile touring expenditures in Elk Valley communities. These communities would be more likely to capture food, accommodation and entertainment expenses than fuel or snowmobile equipment acquisition and maintenance expenses.

---

[46] BC Stats, population estimates for BC Municipalities.

[47] *Socio-Economic Overview of the Crowsnest Pass*, 2002

[48] *Revelstoke Snowmobile Strategy, 2002.*

APPENDIX 3 BACKCOUNTRY COMMERCIAL OPERATIONS

This appendix assesses the impacts of backcountry commercial operations. This includes guided hunting, guided angling and adventure travel operators.

Appendix 3-1 Guided Hunting

There are 11 guide outfitter territories, which are either entirely or partially within the Plan Area. These operations cater primarily to an international clientele from USA and Europe, and while they must all be operated by a B.C. licensed guide, many are backed by investors from outside of Canada.

While guided hunting is the primary product offered by these operators, many also offer wilderness adventure and wildlife viewing tours outside of major hunting seasons. It is estimated that the average guide outfitter in B.C. in 2001 generated $138,500 in revenues from hunting (80%) and $34,500 from other activities (20%), for total revenues of $173,000.[49] These data, along with estimates of employment, employment income and government revenues generated by guide outfitting are summarized in the table below.

Table 13 Economic Parameters of Guide Outfitting in BC and the SRMMP Area

Per Annum	BC Average per Operation[1]	SRMMP Average per Operation	SRMMP Area[2] Total
Hunting Clients	21	26	287
Client Days	182.2	221	2,428
Hunting Revenues	$138,500	$190,000	$2,090,000
Other Revenues	$34,500	$10,000	$110,000
Total Revenues	$173,000	$200,000	$2,200,000
Employment (PYs)	2.6	3	33
Wages & Salaries	$69,300	$79,500	$874,500
Tips and Gratuities @ 7% of Gross Revenues	$12,110	$14,000	$154,000
Government Revenues[3]	$21,300	$21,300	$234,300

Net Economic Value[4]	$34,020	$35,975	$395,725

Notes:

1. Source: G.S. Gislason & Associates, *The Guide Outfitting Industry in BC, An Economic Profile Draft Report*; October 2002; BC Ministry of Sustainable Resource Management.
2. The SRMMP Area Total is calculated as 11 times the BC average per guide outfitter operation. The area covered by the 11 guide outfitting territories is somewhat larger than the Plan Area, but each territory is at least partially in the Plan Area.
3. Government revenues include Guide and Assistant Guide Fees, Guide Royalties, Client Hunting Licences, Client Hunting Tags, Land Tenure, Park Use, Water Licences, Grazing Licences and Property Taxes. Income Taxes are not included.
4. Net Economic Value is calculated as Government Revenues plus 5% of Wages, Salaries and gratuities (assumed economic rent to labour) plus 5% of Total Revenues (assumed economic rent to capital). An estimate of Consumer Surplus to the hunters is not included as the hunters are not residents of BC.

---

[49] G.S. Gislason & Associates, *The Guide Outfitting Industry in BC, An Economic Profile Draft Report*, BC Ministry of Sustainable Resource Management, October 2002.

Guide outfitting territory tenures confer upon the licensee exclusive use of a territory for guided hunting operations (but not for recreation or other commercial uses of the land). The exclusive nature of these tenures, coupled with the requirement that non-resident hunters must use the services of a licensed guide, has generated economic rent that is capitalized in the value of these transferable tenures. Recent sales of these tenures have indicated values for the licenses of up to $1 million (exclusive of hard assets such as lodges, cabins and equipment).

There are several factors that may make the economic parameters for the SRMMP Area guide outfitting operations different than those for the provincial average. These include species hunted, wildlife populations, scale of operations, quality of lodging offered, proximity to client markets and area specific hunting regulations.

Data from the BC Ministry of Water Land and Air Protection[50] indicate that the animal harvest and hunting effort by non-resident hunters declined between 1984 and 2001. Comparing annual averages for the ten year period 1984 to 1993 (Table 14) with annual averages for the three year period 1999 to 2001 (Table 15), total animals killed fell from 174 per year to 134 per year (23% decline). Total hunter days (which is inflated through double counting when summed across species and management units) fell from 3,185 per year in the earlier period to 2,357 in the later period (26% decline). Most of this decline can be attributed to declines in elk, black bear and grizzly bear hunting.

---

[50] BC Ministry of Water Land and Air Protection Wildlife Allocation and Use Section, *Summary Statistics Data Base*, Victoria

Table 14 East Kootenay Hunting Effort for Selected Management Units, 1984-1993

East Kootenay Hunting Effort in MUs 4-1,4-2,4-22 and 4-23* for Selected Species

Annual Averages for Period 1984 - 1993

		Elk			White Tailed Deer**			Mule Deer**			Moose			Grizzly Bear		
		Animals Killed	Number of Hunters	Hunter Days	Animals Killed	Number of Hunters	Hunter Days	Animals Killed	Number of Hunters	Hunter Days	Animals Killed	Number of Hunters	Hunter Days	Animals Killed	Number of Hunters	Hunter Days
MU 4-1	Res.	74	504	3,717	62	232	1,634	54	257	1,821	38	158	804	3	11	131
	Non-Res.	15	47	360							2	5	31	1	2	21
	Total	89	552	4,078	62	232	1,634	54	257	1,821	40	163	834	3	14	152
MU 4-2	Res.	99	482	3,321	81	313	1,911	196	462	2,647	13	73	347	1	5	59
	Non-Res.	19	46	347							1	3	26	2	4	38
	Total	118	528	3,668	81	313	1,911	196	462	2,647	14	77	373	3	8	97
MU 4-22	Res.	323	1,598	12,105	321	1,046	7,523	203	903	6,095	30	133	585	2	8	98
	Non-Res.	29	75	529				0			2	3	15	2	4	24
	Total	352	1,672	12,633	321	1,046	7,523	203	903	6,095	32	136	600	4	11	122
MU 4-23	Res.	474	1,957	18,676	117	604	5,228	138	749	6,572	98	394	2,159	3	12	223
	Non-Res.	15	36	258				0			2	4	19	2	4	34
	Total	489	1,993	18,934	117	604	5,228	138	749	6,572	99	398	2,178	5	16	257
Total	Res.	970	4,541	37,819	581	2,194	16,296	591	2,370	17,135	178	758	3,894	9	36	511
	Non-Res.	77	204	1,494	0	0	0	0	0	0	7	16	91	6	13	117
	Total	1,047	4,745	39,313	581	2,194	16,296	591	2,370	17,135	185	774	3,985	15	49	628

		Goat			Mountain Sheep			Cougar			Black Bear			Total All Species		
		Animals Killed	Number of Hunters	Hunter Days	Animals Killed	Number of Hunters	Hunter Days	Animals Killed	Number of Hunters	Hunter Days	Animals Killed	Number of Hunters	Hunter Days	Animals Killed	Number of Hunters	Hunter Days
MU 4-1	Res.	10	18	109	0	16	103	0	3	20	8	68	515	250	1,267	8,853
	Non-Res.	6	6	27	1	3	30	0	0	1	7	33	267	30	97	737
	Total	16	24	136	1	20	132	0	3	21	15	101	782	281	1,365	9,590
MU 4-2	Res.	4	8	45	4	48	305	3	12	105	7	43	307	406	1,445	9,046
	Non-Res.	2	2	6	2	5	49	1	2	9	12	39	316	38	101	790
	Total	6	11	51	5	53	353	4	14	113	19	81	623	444	1,546	9,836
MU 4-22	Res.	44	86	419	5	64	401	3	16	126	22	165	1,072	952	4,018	28,423
	Non-Res.	18	21	94	1	4	27	1	1	5	11	46	340	64	153	1,034
	Total	61	107	513	6	68	427	4	17	131	34	211	1,411	1,016	4,171	29,456
MU 4-23	Res.	46	92	532	16	140	1,436	2	11	137	43	228	2,193	936	4,186	37,156
	Non-Res.	12	13	58	2	3	20	0	0	1	10	28	235	43	87	624
	Total	58	105	590	17	142	1,456	2	11	138	53	256	2,428	979	4,273	37,780
Total	Res.	103	204	1,105	25	268	2,244	8	42	387	80	504	4,087	2,545	10,916	83,478
	Non-Res.	37	42	186	5	15	125	2	3	15	40	145	1,157	174	438	3,185
	Total	140	246	1,291	30	282	2,369	10	45	403	120	649	5,244	2,719	11,354	86,663

* These management units cover an area somewhat larger than the SRMMP and include all of the SRMMP area.

** The data for White Tailed Deer and Mule Deer represent a 7 year annual average 1987-1993

Source: Summary Statistics Data Base, BC Ministry of Water Land and Air Protection, Wildlife Allocation and Use Section, Victoria

Table 15 East Kootenay Hunting Effort for Selected Management Units, 1999-2001

East Kootenay Hunting Effort in MUs 4-1,4-2,4-22 and 4-23* for Selected Species

Annual Averages 1999 - 2001

		Elk			White Tailed Deer			Mule Deer			Moose			Grizzly Bear		
		Animals Killed	Number of Hunter Hunters	Days	Animals Killed	Number of Hunter Hunters	Days	Animals Killed	Number of Hunter Hunters	Days	Animals Killed	Number of Hunter Hunters	Days	Animals Killed	Number of Hunter Hunters	Days
MU 4-1	R	16	144	1,118	26	104	700	10	123	780	10	19	95	2	5	71
	N	6	24	195	0			2			4	6	27	1	2	21
	Total	22	168	1,312	26	104	700	11	123	780	14	25	123	3	8	92
MU 4-2	R	21	203	1,415	122	345	2,346	48	302	1,791	3	9	52	1	1	11
	N	6	28	216				3			2	2	14	0	1	8
	Total	27	231	1,631	122	345	2,346	51	302	1,791	5	11	66	1	2	18
MU 4-22	R	67	614	4,841	329	938	7,167	32	480	3,378	6	9	31	0	2	26
	N	12	61	405	2			4			3	6	34	1	1	6
	Total	79	675	5,247	331	938	7,167	36	480	3,378	9	15	64	1	4	32
MU 4-23	R	105	679	7,111	131	518	4,794	50	436	4,335	36	45	161	1	1	1
	N	7	19	126				1			2	3	14	1	1	1
	Total	112	698	7,237	131	518	4,794	51	436	4,335	38	48	175	1	1	3
Total	R	209	1,640	14,485	608	1,905	15,007	140	1,340	10,284	55	82	339	3	10	109
	N	30	132	942	2	0	0	9	0	0	11	17	89	3	5	36
	Total	240	1,772	15,427	611	1,905	15,007	149	1,340	10,284	66	99	428	6	15	145

		Goat			Mountain Sheep			Cougar			Black Bear			Total All Species		
		Animals Killed	Number of Hunter Hunters	Days	Animals Killed	Number of Hunter Hunters	Days	Animals Killed	Number of Hunter Hunters	Days	Animals Killed	Number of Hunter Hunters	Days	Animals Killed	Number of Hunter Hunters	Days
MU 4-1	R	4	16	90	1	12	63	0	1	1	6	42	293	75	465	3,210
	N	2	3	24	0	3	27	1	2	8	6	26	229	22	66	532
	Total	6	19	114	2	15	90	1	2	9	11	67	522	96	531	3,742
MU 4-2	R	3	11	56	2	50	306	2	11	223	6	43	393	208	976	6,592
	N	2	3	18	3	8	72	5	6	25	15	34	261	36	82	615
	Total	6	14	74	5	58	378	7	17	248	21	77	654	244	1,058	7,207
MU 4-22	R	12	50	291	1	60	352	5	29	308	8	83	634	460	2,265	17,028
	N	9	13	56	0	4	35	5	7	32	14	49	347	51	142	915
	Total	21	63	346	1	64	387	10	36	339	22	133	982	511	2,407	17,943
MU 4-23	R	22	82	462	6	107	1,020	3	20	233	25	128	1,362	379	2,016	19,480
	N	12	16	91	2	4	27	1	1	3	1	5	34	26	48	295
	Total	34	98	553	8	111	1,047	4	21	236	26	133	1,396	405	2,063	19,775
Total	R	41	159	898	10	229	1,740	11	60	764	45	296	2,682	1,122	5,722	46,310
	N	26	36	189	5	18	161	11	16	68	35	114	871	134	338	2,357
	Total	67	195	1,087	16	248	1,902	22	76	832	80	410	3,554	1,256	6,060	48,667

* These management units cover an area somewhat larger than the SRMMP and include all of the SRMMP area

Source: Summary Statistics Data Base, BC Ministry of Water Land and Air Protection, Wildlife Allocation and Use Section, Victoria

Appendix 3-2 Guided Angling

There are approximately 72 B.C. licensed guides and 88 assistant guides in the East Kootenay region, of which 35 guides and 40 assistants operate on the Elk River[51]. There is also some use of the Bull, Wigwam and Flathead rivers for guided angling. Angling guide operations charge from $300 to $500 per day and cater largely to US clients (85%)[52] .

The Elk River Creel Survey 2002[53]estimated that there were 2,022 guided angler days (92% US residents) on the Elk River between Sparwood and Elko in 2002 (July 1 to Oct. 31). If these guided anglers paid an average of $400 per day to their guides, then the Elk River fishery generated total guiding revenues of $810,000. Assuming that this represents about two thirds of all guided angling in the SRMMP area, guiding revenues generated by the SRMMP area fisheries total about $1.215 million.

---

[51] Jamieson, B, D. Brooks, et al Draft March 25, 2003; pg.51

[52] Ibid, pg. 51

[53] Heidt, K.D., 2002, pg. 11.

B.C. residents do not provide all of the guiding services offered in the SRMMP area, as illegal guiding operations from Alberta and the U.S. have also been observed operating in the SRMMP area. The extent of this illegal activity is not known.

Appendix 3-3 Adventure Travel

One of the main adventure travel operators in the SRMMP area is Island Lake Lodge, which focuses on cat-skiing and hires 85 people during the winter months. The Island Lake Lodge is on private lands, but some of the guided tours and cat-skiing takes place on crown lands.

The guide-outfitting operations also offer adventure tours and these account for some $110,000 in revenues. These are included in the guide-outfitting sector.

In addition to the Island Lake Lodge and the guide-outfitting operations, there are an estimated 30 commercial operators who offer guided adventure tours in a variety of sectors. These range in size from part-time guides to operations hiring up to 10 people during the peak summer or winter months.

The following table summarizes the types of activities, number of operators and approximate revenues that might be generated from the Plan Area in commercial backcountry tourism. The intent of these estimates is to provide a rough idea of the magnitude of impacts and should be therefore be viewed as very approximate.

Table 16 Socio-Economic Impacts of Adventure Travel Operators in SRMMP

Description of Activity	Number of Operators (may offer more than one activity) (note 1)	$ per Client Day (note 2)	Gross Revenues per Operator (note 2)	Estimated SRMMP Revenues from Activity
Snowmobiling - Popular destination for snowmobiling; strong interest in acquiring commercial tenures	1 larger operation, potentially 2 to 4 others	$300 per day (note 3)	$100,000 for large operators	$200,000
Ski Touring – Popular destination for ski-touring	2 to 5 operators	$190 per day	$114,000 (600 client days)	$200,000
Cat-skiing – major operator is Island Lake Lodge & Powder Cowboys	Mainly Island Lake Lodge			$4 million
Heli-skiing – no existing operators and potential is viewed as limited	-	-	-	-
Heli-hiking – no existing operators	-	-	-	-
ATVs, Motorbikes – Popular activity for local residents; used in conjunction with other recreation activities such as hunting, berry picking, wood gathering, and general access to backcountry.	2	$200 to $250 per day	$25,000 (note 4)	$50,000
Mountain Biking -	1 larger operator, potentially 2 or 3 smaller operators	$150 per day	$100,000 for large operators, $45,000 for small operators	$200,000

Description of Activity	Number of Operators (may offer more than one activity) (note 1)	$ per Client Day (note 2)	Gross Revenues per Operator (note 2)	Estimated SRMMP Revenues from Activity
Hiking/ Wildlife Viewing including Photography	7 operators but assume 2 do not overlap with other activities	$200 per day	$100,000 (500 client days) for large operators	$200,000
River Rafting, Canoeing, Kayaking	3 smaller operators	$140 to $150 per day	$50,000 per operator	$150,000
Horseback Trail Riding	6 operators, but this includes guide-outfitting	$200 to $300 per day (note 5)	$100,000 (500 client days)	$100,000 excl. guide outfitting
Other (e.g. Caving, Rock Hounding & Recreational Prospecting, Fossil Gathering and Fossil Tours)	May be up to 5	Varies depending on activities		$100,000
TOTAL (estimate) Cat-Skiing and Adventure Travel Lodge Other Adventure Operators	May be up to 30	$150 to $300 per day	$25,000 to $114,000	$4 million Up to $1.2 million
TOTAL	May be up to 30			$5.2 million

Notes:

1. The number of operators is based on: Jamieson (2003) and discussions with industry representatives.
2. These assumptions are based on: Stuart Gale & Associates and Pierce Lefebvre Consulting, *Building Block for Economic Development & Analysis, Land Based Ecotourism*, draft dated January 31st, 2003.
3. Estimates for gross revenues from guided snowmobiling activity are based on ski-touring operators and the fact that the cost of guided snowmobiling is $300 per day (Jamieson, 2003) whereas guided ski-touring rates are $190 per day.
4. There are no building blocks for ATV touring activities, but one operator says that the potential is much less than for guided snowmobiling activities.
5. Stuart Gale & Associates et al, $200 per day whereas Jamieson indicates $300 per day.

The following table provides a very rough estimate of the annual Net Economic Value from adventure travel commercial operators in the SRMMP.

Table 17 Total Socio-Economic Impacts from Adventure Travel Operators in SRMMP

	Total
Revenues From above table	$5, 200,000
Wages and Salaries: 25% of revenues (note 1)	$1,300,000
Public Sector Fees (assume $1,000 per small operator, include room tax for lodge (note 2)	$70,000
Annual Net Economic Value ($)	
• Public sector rent:	$70,000
• Labour rent – say at 5% of wages	$65,000
• Industry rent – say at 5% of revenues	$260,000
Total Net Economic Value	$395,000

Notes:

1. Wages and salaries are based on the following: river rafting: 20%, horseback trail riding: 28%, multi-day hiking: 30%, ski-touring: 28%, bike touring: 22-25% and lodges: 25.8%; Source: MSRM, *Building Block, Land Based Tourism*, 2003 and *Building Block-Commercial Lodges and Camps/Huts*, July 2002.
2. Government fees and permits can range from $500 to up to $3,000 for larger adventure tourism operations; also, room revenue tax of 8%.

APPENDIX 4 SOCIO-ECONOMIC IMPACT PARAMETERS BY SRMMP ACTIVITY

The following table outlines some of the socio-economic impact parameters estimated for various industrial and recreation activities occurring, or potentially occurring, in the SRMMP area. These estimates are derived from data presented in Appendices 1 through 4 of this report. In many cases the **estimates are very speculative**, and presented only to give the reader a very rough idea of the magnitude of socio-economic impacts these activities might generate. Not all of the activities mentioned elsewhere in this report are included individually in this table.

Socio-Economic Impact Parameters by SRMMP Activity

	Annual Gross Revenues/ Expenditures	Direct Jobs	Net Economic Value
Coal, Metals and Minerals:			
• Coal Exploration in SRMMP	Intermittent		Modest
• Coal Mining in SRMMP	Substantial Potential	-	Substantial Potential
• Mineral Exploration	$500,000	5 PYs	Minimal
• Metals and Mineral Mining	Modest Potential		Modest Potential
Energy:			
• Oil and Gas and coal bed methane	Substantial Potential		Substantial Potential
Forestry			
• SRMMP area	Substantial	155 PYs	$3.15 million
Backcountry Recreation			
• Resident Hunting	Expenditures of $2.4 million		$2.4 million
• Resident Angling	Expenditures of $2.7 million		Unknown, Likely Substantial
• Wildlife Viewing / Hiking	Expenditures of $2.5 million		Willingness to pay of $6.8 million
• Snowmobiling	Expenditures of $620,000 Substantial Potential		Unknown Substantial Potential
• Ski Touring	Unknown but likely Substantial		Unknown but likely Substantial
Backcountry Commercial			
• Guided Hunting	$2.2 million in revenues	33 PYs	$0.4 million
• Guided Angling	$1.215 million in revenues	Unknown	Unknown
• Adventure Travel Lodge and Cat Skiing Operations	$4 million in revenues	50 PYs (80 full time in winter)	$0.3 million
• Adventure Travel Operators	$1.2 million in revenues	Unknown	$0.1 million
Agriculture	5 ranchers		Minor
Trapping	$0.06 million		Unknown

In terms of net economic value, the most significant existing activities are forestry, resident hunting, resident angling, wildlife viewing/hiking and perhaps ski touring. In addition, potential future activities with substantial net economic value are coal mining, coal bed methane and snowmobiling.

APPENDIX 5 SOCIO-ECONOMIC SIGNIFICANCE BY SECTOR AND SRMMP IMPACTS

Description of Socio-Economic Significance	SRMMP Impacts
COAL MINING AND MINERAL EXPLORATION • Coal mines that are adjacent to the SRMMP area generate some 2,500 PYs of direct employment and $172.4 million in direct employment income. For every direct PY, 0.61 PY in indirect and induced employment is generated regionally and another 0.69 PY is generated elsewhere in B.C. The coal mines provide an estimated $7.4 million in mining and mineral taxes, $6.9 million in property taxes to Elkford, Fernie and Sparwood, and another $16.9 million in other industry payments to governments. • Net economic value from existing coal mines (which are not in the Plan Area) is estimated at $16 million including the $7.4 million in mining and mineral taxes and $8.6 million in labour rents. • Existing coal mining sites are outside of the Plan Area, but coal deposits extend into the Plan Area in the upper Elk Valley and the Flathead.	NEUTRAL FOR COAL MINING POTENTIAL • Does not impact existing coal mining operations. • Confirms boundaries of the ERDZ-Coal lands, but does not specify ERDZ-Coal guidelines, which it intended to do. This has left some uncertainty for licence holders on ERDZ-Coal lands in the Plan Area. • Designates conservation measures for the Lower Flathead area, which could increase development costs for known coal resources in the area. POSITIVE FOR MINERAL EXPLORATION • The probability of finding and developing a mineable deposit is now increased; the positive impact results primarily from the two-zone legislation, not the SRMMP (the plan confirms the two-zone system for mining in the Plan Area, stating numerous times that mineral exploration and development are permitted anywhere outside the protected areas). • Designates conservation measures for the Lower Flathead area, which could increase development costs of the copper and gold prospects in that region. On the other hand, these conservation measures may help reduce the need or demand for additional protected area.
ENERGY: • Some potential but no existing oil and gas activity. • Substantial coal bed methane potential; pilot testing is proceeding near the SRMMP area.	POSITIVE FOR ENERGY SECTOR • Potential exploration and development cost increases in some areas are balanced against the generally greater certainty of how and where development can proceed.

Description of Socio-Economic Significance	SRMMP Impacts
FOREST INDUSTRY: • The major forest operations in the Cranbrook area generate 922 PYs of processing employment; major operations include the Tembec wood products facilities in Cranbrook and Elko, the Tembec pulp mill in Skookumchuck and the Galloway Lumber mill. • For each m3 harvested, the forest industry generates an estimated 0.93 of direct employment, 0.49 PY of indirect and induced employment in the region and another 0.68 PY of indirect and induced employment elsewhere in B.C. • The SRMMP represents 19.2% of the Timber Harvesting Land Base of the Cranbrook TSA, which translates to an estimated 167,283 m3 AAC contribution assuming a pro-rata share. • Stumpage and related payments are $16.45 per m3. • The net economic value from the SRMMP timber is estimated at $3.15 million, including $2.75 million in public sector rents (stumpage and related payments) and $0.4 million in labour rents.	POSITIVE OVERALL FOR FOREST INDUSTRY • Positive timber volume influences from new Ungulate Winter Range management and the matrix approach to Connectivity, should offset any negative influences from Riparian or Backcountry River Corridor management objectives. • Logging costs may increase as a result of management prescriptions relating to riparian areas, particularly in the Flathead area and from seasonal activity restrictions on Ungulate Winter Range; also, recreation access control may impose costs on licensees. • Greater restrictions in the Flathead area, however, may reduce demand for more protected area in that region, which would prevent timber harvesting entirely. • The spatial designation of OGMAs/Mature, the Connectivity Matrix and the SRMMP interpretation of Wildlife Tree Retention tables should reduce planning costs. Some of the savings in planning costs may be partially offset by the requirements for visual impact analyses and by additional costs related to planning for logging near consumptive streams and watersheds. • All of the SRMMP management objectives are rooted to some degree in the EKLUP, the KBLUP-IS, the KB-HLPO or the Forest Practices Code. • The SRMMP has at least partially delivered a tangible level of timber access and land management certainty. • The SRMMP is likely to assist companies in achieving some levels of forest stewardship certification and in demonstrating to the wider community that sound forest management is being practiced. Vulnerability to product boycotts or production disruptions will likely be reduced.

Description of Socio-Economic Significance	SRMMP Impacts
BACKCOUNTRY RECREATION Resident hunting: • Hunting for elk, white tailed deer and mule deer accounts for 85% of hunting effort in SRMP area. • Number of resident hunters and hunting effort has dropped by almost half since the mid-1980s • Total expenditures related to hunting are estimated at $2.4 million for 2002. • Net economic value is also estimated at $2.4 million.	BACKCOUNTRY RECREATION • The SRMMP restrictions will positively impact non-motorized activities throughout the year. Activities will have dedicated non-motorized areas, but can also continue to use areas that allow motorized access. • The restrictions on summer motorized access may have negative impacts on certain activities such as botanical forest product gathering, wood gathering, and for recreational users who are seniors, handicapped, or young families who cannot easily access the backcountry. • The restriction of heli-aided activities reduces the range of experiences available to recreationists. • The negative aspects of access restrictions imposed by the SRMMP will be more pronounced for resident recreationists, whose activities tend to be more spontaneous, than for commercial tourism operators.
Resident angling: • Number of anglers in B.C. has remained stable over the past 10 years (300,000 BC residents and 80,000 non-residents) • Estimates for SRMMP suggest 19,381 angler days with B.C. residents accounting for 34%, other Canadian accounting for 24% and U.S. residents accounting for 42%. • Total expenditures from anglers in the SRMMP area are estimated at $2.7 million.	
Wildlife Viewing • B.C. residents spent on average $17.40 per recreation day on direct wildlife related activities (1996), but would be willing to pay $44.60 more per recreation day (net economic value). • Assuming that the SRMMP area accounts for 7.5% of expenditures related to wildlife viewing in the Kootenays, B.C. residents' expenditures on direct and indirect wildlife viewing activities in the SRMMP area add to $2.5 million per annum. • Willingness to pay indicates $6.8 million in net economic value.	
Snowmobiling • The SRMMP generates an estimated 3,625 local resident days and another 7,300 rider days by non-residents. • Expenditures from non-residents snowmobiling in the area are estimated at $620,000 per season, based on an average of $85 per day. This is at the low end of expenditures by snowmobiling enthusiasts to reflect the difficulty in capturing the economic benefits of visitors from Alberta	

Description of Socio-Economic Significance	SRMMP Impacts
COMMERCIAL BACKCOUNTRY RECREATION: Guide-Outfitting: • There are 11 guide-outfitter territories in the SRMMP, which generate 33 direct PYs of employment. • B.C. licensed guides must operate each territory, but investors from outside Canada back many operations. • Total revenues are \$2.2 million including \$2.1 million from hunting and \$0.1 million from other activities. • Net economic value is estimated at \$395,725, which includes \$234,300 in government revenues (public sector rent), \$51,425 in labour rent and \$110,000 in industry rents. • Consumer surplus for hunters is not included as hunters are not local residents. • Recent sales of guide-outfitter tenures have indicated values for the licenses of up to \$1 million (exclusive of hard assets such as lodges and equipment). • The animal harvest and hunting effort by non-resident hunters has declined between 1984 and 2001.	COMMERCIAL BACKCOUNTRY RECREATION: • The Recreation Access Management zoning is generally beneficial to commercial tourism operators, in enhancing their ability to deliver a consistent experience to clients. • The restrictions on motorized access are not as constraining to commercial operators, as they can more easily choose where to operate. • Constraints on heli-aided commercial tourism operations reduce the options available to commercial adventure tourism developers. • Restrictions on backcountry lodge development may preclude some significant market opportunities, and/or confer benefits on existing lodge and cabin owners.
Guided Angling: • Annual guiding revenues for angling in the SRMMP are estimated at \$1.215 million, assuming that guided angling in the Elk Valley account for two-thirds of all guided angling in the SRMMP.	
Adventure Travel: • The Island Lake Lodge (and associated cat-skiing operations) is the main adventure travel operator in the SRMMP area, hiring 85 people during the winter months. The lodge is on private land but some of the guided tours and cat-skiing takes place on crown lands. • There may be up to 30 other adventure travel operators that offer a variety of tours in the SRMMP area including ski touring, snowmobiling, ATVs and motorbike tours, mountain biking, river rafting/canoeing/kayaking, caving, etc. • Combined with Island Lake Lodge's operations (which generate the majority of the revenues), these operations might have annual revenues of up to \$5.2 million (excluding adventure tours by guide-outfitting of approximately \$110,000 in revenues), and an annual net economic value of \$395,000.	

Description of Socio-Economic Significance	SRMMP Impacts
AGRICULTURE • There are 5 ranchers grazing livestock in the SRMMP area. • Suitable grazing land is a scarce resource in the region.	NEUTRAL • Plan supports more intensive management of existing range lands to increase forage production. • Limits domestic grazing opportunities in many areas.
TRAPPING: • There are 25 traplines in the SRMMP area with gross revenues estimated at $62,500.	POSITIVE • Conservation measures and motorized access restrictions (which do not apply to licensed trappers) should enhance wildlife habitat

FIRST NATIONS:
• The entire SRMMP Plan Area falls within the Ktunaxa Nation's Traditional Territory. The Ktunaxa are currently at Stage 4 of the 6-stage Treaty Process, which is neither limited, nor intended to be limited, by the SRMMP.
• The Ktunaxa have expressed concern about their limited capacity to effectively participate in the planning process, and do not consider the consultation that occurred prior to publication of the draft plan to be meaningful or adequate.
• The Socio-Economic Base Case for the SRMMP noted some of the interests and concerns expressed by Ktunaxa representatives at the outset of the planning process, including:
  • Support of environmentally sensitive timber harvesting and a desire to become more involved in the forest industry,
  • The impacts of logging operations on fish and wildlife,
  • The need to integrate timber harvesting with other sectors such as tourism, trapping, hunting, fishing and other traditional, spiritual and commercial uses, and
  • The need to preserve archaeological and cultural sites.
	UNDETERMINED
	• The SRMMP states the intent to provide for cultural, economic and environmental interests of the Ktunaxa, and to continue to pursue consultation with the Ktunaxa Nation.
	• In the course of this assessment, no effective facility or mechanism was established to gather information on how the SRMMP may impact the interests of the Ktunaxa Nation, and no assessment of those impacts is therefore attempted.

Description of Socio-Economic Significance	SRMMP Impacts
SETTLEMENTS: • Declining populations in the SRMMP in the past 20 years have limited the pressure to open new settlement areas or expand the existing ones, except in the Fernie area and for certain housing types in Elkford and Sparwood ('shadow population'). • Fernie, Sparwood and Elkford are very dependent on coal mining. The forest industry is also important to Sparwood and Fernie, but especially the unincorporated community of Elko. • Fernie has the greatest degree of diversification with the rapid expansion of the Fernie Alpine Resort, which reports 330,000 skier days for the 2001/2002 season. Accommodation and Food Services labour force in Fernie increased by 77% between 1996 and 2001. • Cranbrook, Jaffray, Tobacco Plains Reserve and the Rocky Mountain Trench communities west of the Plan Area also depend to some degree on the resource values of the SRMMP area.	SETTLEMENTS: • In general, coal industry impacts from the SRMMP will be experienced in Fernie, Sparwood and Elkford, and forest industry impacts in Elko, Jaffrey and Cranbrook. The SRMMP adds some certainty of access to resources for the mining and forest industries, which should result in some increase in confidence in the basic viability of the affected communities. This impact will likely be difficult to detect, however, in the face of the many other regulatory, operating and market uncertainties faced by these industries. • SRMMP impacts on recreation and tourism will be felt in all of the communities mentioned above. The impacts on resident recreation will largely reinforce the lifestyle choices made by the existing populations in these communities. It appears as though past patterns of recreational use and activity have been defended in the Plan, in the face of new motorized technologies that threaten to erode the enjoyment of these activities in many areas. • The Plan may have negative impacts on the ability of Elkford (the most vulnerable of the three major communities), to diversify its economic base through attracting more motorized recreation tourists. Elkford has difficulty, however, capturing the economic benefits of recreation activity.

APPENDIX 6 BIBLIOGRAPHY

B.C. Ministry of Environment, Lands and Parks – Wildlife Branch, *The Economic Value of Resident Hunting in British Columbia, 1995*, Victoria.

B.C. Ministry of Forests, *B.C. Heartlands Economic Strategy - The Forestry Revitalization Plan*, Victoria, March 2003.

B.C. Ministry of Forests, Chief Forester Larry Pederson, *Cranbrook Timber Supply Area, Rationale for Allowable Annual Cut Determination, Effective January 1,2001*.

B.C. Ministry of Forests, *Major Primary Processing Facilities in British Columbia*, 2000.

B.C. Ministry of Sustainable Resource Management (MSRM), *Southern Rocky Mountain Management Plan, Public Review Draft*, February 14th, 2003 draft.

B.C. Ministry of Water Land and Air Protection, Wildlife Allocation and Use Section, *Summary Statistics Data Base*, Victoria, 2001.

B.C. Ministry of Water, Land and Air Protection *BC Fisheries, Freshwater Fishing Regulations Synopsis 2003 – 2004.*

B.C. Ministry of Water, Land and Air Protection, *Hunting and Trapping Regulations Synopsis 2002 –2003.*

B.C. MSRM, *Building Block-Commercial Lodges and Camps/Huts*, July 2002.

B.C. MSRM, *Socio-Economic and Environmental Assessment for Land and Resource Management Planning in British Columbia: Guiding Principles*, Draft for Discussion Purposes, January 2003.

City of Revelstoke, *Revelstoke Snowmobile Strategy*, 2002, www.cityofrevelstoke.com/edc/snowmobile.

Crane Management Consultants, *Elk Valley Economic Development Implementation Strategy*, prepared for BC Ministry of Small Business, Tourism and Culture, 1994

Crown Corporations Secretariat, *Multiple Account Evaluation Guidelines,* 1994.

Federal Department of Fisheries and Oceans, *Survey of Recreational Fishing in Canada, Preliminary Results* http://www.dfo-mpo.gc.ca/communic/statistics/RECFISH/new2002/sum2000_e

G.S. Gislason & Associates, *The Guide Outfitting Industry in BC, An Economic Profile Draft Report*, B.C. MSRM, October 2002.

Heidt, K.D. *Elk River Creel Survey 2002*, prepared for BC Ministry of Water Land and Air Protection, Cranbrook B.C., 2002.

Holman, Gary and Pierce Lefebvre Consulting, *Socio-Economic Base Case for the Southern Rocky Mountain Management Plan (SRMMP)*, Draft for Discussion Purposes, B.C. MSRM, June 15, 2002.

Joint BC Government-Sector Steering Committee, *BC's Freshwater Recreational Fishery: Setting Direction For The Future – Context Report*, 2002

Jamieson, B., D. Brooks et al, *A Tourism Opportunity Strategy for the Southern Rocky Mountain Area in B.C.* Draft March 25, 2003, B.C. MSRM, Cranbrook Office, 2003.

Monahan, P.A., *The Geology and Oil and Gas Potential of the Flathead Area, Southeastern BC*, for BC Ministry of Energy and Mines, 2000.

Pearse, Peter H., *Ready for Change, Crisis and Opportunity in the Coast Forest Industry*, A report to the Minister of Forests on British Columbia's Coastal Forest Industry, Vancouver November 2001.

PriceWaterhouseCoopers report titled *The Mining Industry in British Columbia – 2000*

PriceWaterhouseCoopers, *The Forest Industry in British Columbia, 1999*.

Roger Reid, *British Columbia Resident Hunter Survey 1995*, BC Ministry of Environment, Lands and Parks.

Roger Reid, *The Economic Value of Wildlife Activities in British Columbia, 1996* , BC Ministry of Environment, Lands and Parks, Victoria, 1998.

Socio-Economic Overview of the Crowsnest Pass, 2002

Stuart Gale & Associates and Pierce Lefebvre Consulting, *Building Block for Economic Development & Analysis, Land Based Ecotourism*, draft dated January 31st, 2003, BC MSRM, 2003.

SOUTHERN ROCKY MOUNTAIN MANAGEMENT PLAN

APPENDIX 20.0

KOOTENAY BOUNDARY LAND USE PLAN

HIGHER LEVEL PLAN

Kootenay Region
Ministry of
Sustainable Resource
Management

Other Links

- Kootenay Boundary Land Use Plan Homepage
- Plot and Data Files FTP Site

KOOTENAY BOUNDARY HIGHER LEVEL PLAN

The higher level plan order for the Kootenay Boundary will come into effect on January 31, 2001. The following elements of the Kootenay Boundary implementation strategy are established in the Kootenay Boundary higher level plan order:

- In addition to old forest retention targets, there are mature forest retention targets.
- Measures to address caribou, regional connectivity and important avalanche tracks for grizzly bears are included.
- Green-up will be reduced while maximum patch size has been increased in accordance with the natural forest disturbance patterns.
- Enhanced resource development zones for timber are confirmed.
- Restoration of fire-maintained ecosystems.
- Some increased protection for streams within domestic watersheds.
- Establishment of scenic areas.

Achievement of the economic and environmental objectives will be assessed after three years, to allow time for the higher level plan order to take effect and be monitored.

If you have any questions, please contact Per Wallenius Kootenay Region GIS Technician.

W3C HTML 4.01

SOUTHERN ROCKY MOUNTAIN MANAGEMENT PLAN

APPENDIX 21.0

KOOTENAY BOUNDARY LAND USE PLAN

IMPLEMENTATION STRATEGY

Kootenay/Boundary Land Use Plan

Implementation Strategy

Kootenay Inter-Agency Management Committee

June 1997

CONTENTS

Chapter 1 Introduction

1.1 Regional Planning Process
1.2 Implementation Strategy Objectives
1.3 Plan and Implementation Strategy Scope
1.4 Principles Applied in KBLUP Implementation Strategy Development
1.5 Land Use Designation Categories

Protected Areas
Special Resource Management Zone
Integrated Resource Management Zone
Enhanced Resource Development Zone

Chapter 2 General Resource Management Direction

Economic Values
Social Values
Conservation Values

Chapter 3 Geographically Specific Resource Management Direction

3.1 Explanation of Resource Management Guidelines and Resource Value Maps

3.2 Management for General Biodiversity
3.3 Connectivity Guidelines
3.4 Grizzly Bear Guidelines
3.5 Ungulate Winter Range Guidelines
3.6 Mountain Caribou Guidelines
3.7 Community and Domestic Watershed Management

3.8 Front Country Visuals Guidelines
3.9 Backcountry Recreation Guidelines
3.10 Rangeland (Fire Maintained Ecosystems) Guidelines
3.11 Timber Enhanced Resource Development Zone Guidelines
3.12 Access Management Guidelines
3.13 Human Settlement Management
3.14 Subsurface Resources Guideline

Chapter 4 Protected Areas

4.1 Introduction
4.2 General Management Objectives and Strategies for New Protected Areas

Chapter 5 Socio-Economic Development Measures

5.1 Economic Transition Background
5.2 The Kootenay/Boundary Economic Transition Plan

A. Community Monitoring
B. Sectoral Initiatives
C. Major Project Development

Chapter 6 Plan Management and Administration

6.1 Plan and Implementation Strategy Adoption
6.2 Plan Implementation
6.3 Subsequent Land Use Planning
6.4 Public Involvement Opportunities in Subsequent Land Use Planning
6.5 Plan Monitoring and Reporting
6.6 Annual Public Report
6.7 Plan Interpretation and Dispute Resolution
6.8 Plan Amendment

Glossary

References

- This document is currently unavailable

Appendices

Supplementary Resource Management Objectives and Strategies Within Forest Districts

Appendix 1 Arrow Forest District

Appendix 2 Boundary Forest District

Appendix 3 Cranbrook Forest District

Appendix 4 Golden Forest District

Appendix 5 Invermere Forest District

Revelstoke Minister's Advisory Committee(RMAC) Final Recommendations
NOTE: Following the above link with remove you from the RMD web site. Use the 'back' button on your browser to return to this page.

KBLUP Resource Management Zones Map (370K) | (167K) | (104K)

Last Updated: 04/20/01

•Top •Copyright •Disclaimer •Privacy •Government of British Columbia

W3C HTML 4.01 ✓

• Ministry Home
• Government of British Columbia
Kootenay Region
Ministry of Sustainable Resource Management
The Minister
News
Search
Reports & Publications
Home
Contacts

Kootenay/Boundary Land Use Plan

Implementation Strategy

Kootenay Inter-Agency Management Committee

June 1997

Chapter 1: Introduction

1.1 The Regional Planning Process

The Kootenay/Boundary region in southeastern British Columbia has an extensive history of land and resources development and conservation and associated planning activity. Building on this past, and in response to escalating land use conflicts, the provincial government directed in 1992 that a strategic land use plan -- for the whole region -- be prepared to identify a comprehensive and integrated vision for regional land and resource use. A regional land use planning process was conducted in the Kootenays between January 1993 and June 1997. This Kootenay/Boundary Land Use Plan (KBLUP) Implementation Strategy consolidates the results of those planning efforts.

The regional planning process began in January 1993 when the British Columbia Commission on Resources and Environment (CORE) convened shared decision-making planning processes in the East Kootenay and the West Kootenay-Boundary areas. Planning Tables, comprised of representatives of key interests, worked collaboratively with government representatives until August 1994 to develop recommendations to the Commission on general land allocation, resource management practices and socio-economic transition measures. On the basis of those efforts, CORE submitted East Kootenay and West Kootenay-Boundary land use plan recommendations to the government in October 1994.

Following receipt of CORE's recommendations, the provincial government consulted directly with communities and interested parties in the region, and subsequently released the government's East Kootenay Land Use Plan and West Kootenay-Boundary Land Use Plan in March 1995. These announcements reflected significant government land allocation decisions -- notably decisions on designation of major new protected areas, special resource management zones, integrated resource management zones and preliminary enhanced resource management zones. The announcements also committed the government to a wide range of regional socio-economic initiatives, including measures to improve and match worker skills with new job opportunities, invest in improved productivity and rehabilitation of forest lands, grazing lands and watersheds, secure more employment in the value-added sector, invest in regional and community infrastructure, and to stimulate investment and employment in the tourism and small business sectors. The diversity of socio-economic strategies that were identified in the government decisions, as well as future strategic directions for socioeconomic development and planning in the region are described more fully in chapter 5.

The government's 1995 land use decisions also committed provincial agencies to further processes to refine the boundaries of the timber enhanced resource development zone, develop geographically-specific resource management objectives across the region, and provide the West Kootenay community of Revelstoke with the opportunity to advise on specific resource management guidance for the Revelstoke District. Accordingly, from August 1995 to

June 1997, work was undertaken to finalize those aspects, enabling development of the KBLUP Implementation Strategy. The work of the Minister's Advisory Committee in Revelstoke is anticipated to be complete in the fall of 1997.

1.2 Implementation Strategy Objectives

The main objectives of the provisions contained in this KBLUP Implementation Strategy are to:

- contribute to environmental, social and economic sustainability
- reduce the potential for disruptive land use conflicts
- help provide a secure and certain basis for long-term public and private planning and investment in resource management and community development
- integrate the March 1995 government KBLUP decision with the Forests Practices Code and other government strategic policy guidance dealing with land and resource management, such as the Provincial Grizzly Bear Conservation Strategy, emerging policy on managing mountain caribou and access, the Mineral Exploration Code, the Forest Sector Strategy, the Regional Biodiversity Benchmark Project, and the Invermere Enhanced Forest Management Pilot Project, as well as socioeconomic transition, and
- provide a strategic context and workable direction for more detailed, operational levels of land and resource planning and day-to-day administrative decision-making.

1.3 Plan and Implementation Strategy Scope

The KBLUP applies to all public lands and waters in the Kootenay/Boundary regional planning area, which corresponds with the Ministry of Forests' Nelson Forest region.

The plan does not contain prescriptive direction for privately owned land, although a number of the plan's objectives assume certain environmental and economic contributions from the region's relatively extensive proportions of private land.

Approved and adopted at the Cabinet level, the KBLUP and Implementation Strategy represents the corporate policy of the British Columbia government. Accordingly, all relevant provincial government agencies, in delivering their mandated responsibilities, are required to observe, comply with and implement the guidance contained in the plan. Responsibilities and mechanisms for KBLUP management and administration (including provisions for plan adoption, implementation, monitoring and reporting, interpretation and dispute resolution and plan amendment) are identified in chapter 6.

The appropriate provisions of the KBLUP and Implementation Strategy will be declared as a higher level plan pursuant to the *Forest Practices Code of British Columbia Act (1995)*, as a legal means of ensuring consistency between the strategic guidance contained in the KBLUP, including the Implementation Strategy, and strategic and operational plans under the Code that are subsequently prepared for forest management. Beyond providing strategic guidance to future lower level planning processes, the KBLUP and Implementation Strategy will also supply important land use and resource management guidance in the development and the day-to-day administration of natural resources legislation, programs and policies, in evaluating future major project developments that are subject to the *Environmental Assessment Act* and will provide an overarching context for socio-economic planning initiatives.

1.4 Principles Applied in KBLUP Implementation Strategy

Development

The KBLUP Implementation Strategy has been prepared on the basis of the following general principles. The KBLUP Implementation Strategy:

- is consistent with the government's KBLUP decision on land use and socio-economic development initiatives, announced in March 1995
- is consistent with government policy direction that the land and resource management objectives and strategies developed for geographically-specific application should not cause additional reductions to short-term timber supply availability, beyond the harvesting reductions already associated with the Chief Forester's 1994-96 AAC determinations for TSAs and TFLs, implementation of the Forest Practices Code (FPC), and implementation of government's protected area decisions
- is consistent with the Provincial Grizzly Bear Conservation Strategy and the draft Provincial Mountain Caribou Strategy, and emerging policy on access management and the Mineral Exploration Code
- builds on and integrates the extensive work done by the multi-party CORE Tables
- provides the appropriate nature and level of land and resource management guidance to enable the efficient and effective implementation of FPC, notably FPC requirements for operational forest and range planning, and
- respects the legal rights of existing land and resource tenure holders.

As a result of application of the above principles, the KBLUP Implementation Strategy represents a synthesis of current government policy on land and resource use planning and management, together with the results of over three years of intensive and participatory planning effort, to provide a comprehensive strategic vision for the Kootenay/Boundary region.

1.5 Land Use Designation Categories

A regional land use designation system defines broad categories of land use that are applied to different geographic areas. The purpose of designating land into these categories, as a product of the planning process, is to communicate the general management guidance for the lands and natural resources located within the designations.

The Kootenay/Boundary regional land use plan, announced in March 1995, allocated the Crown land base into four main land use designation categories, as shown on the regional land use Plan Map (Map 1). The land use designations span a continuum from conservation-oriented land uses (e.g., protected areas) to development-oriented land uses (e.g., enhanced resource development zone). The protected area designation provides relatively straightforward and prescriptive land management guidance in the sense that these areas are classified as provincial or federal parks, wherein certain land uses(e.g., timber and mineral extraction) are prohibited by law or regulation.

The Plan's three other land use designation categories (special, integrated and enhanced zones) do not, in themselves, provide prescriptive land and resource management guidance. Instead, these designations indicate a general land/resource management intent and a comparative degree of emphasis of conservation-oriented or development-oriented land uses. The three land use designations, as shown on the regional Plan Map (Map 1), are the result of application of pre-defined land allocation criteria, as described below for each land use designation category

To be overly definitive in a strategic level plan of the specific land uses / activities that can or cannot occur, or the particular resource management standards that should or should not apply, in each of these three zones is neither feasible nor desirable, given the geographic variability of resource qualities and attributes throughout the zones, and the goal to optimize opportunities for all resource values to the extent possible, within an integrated resource management philosophy. The general mapping scale and the low resolution of information separation at this broad scale makes it inappropriate to adopt specific and detailed management strategies by zone categories. Instead, the KBLUP Implementation Strategy addresses the need to present sufficiently prescriptive land and resource management guidance through regional objectives and strategies (chapter 2), spatially referenced resource management guidelines for individual resource values (see chapter 3), and by supplementing the regional guidance and guidelines with statements of specific objectives and strategies for individual resource values within resource management zones in the planning area (see appendices 1-7).

Protected Area

The objective of this designation is to protect viable representative examples of natural diversity and special natural, cultural heritage and recreational features, consistent with the provincial protected area strategy. Land use within protected areas emphasizes resource conservation to the degree that resource extraction is excluded and other land uses may be limited or excluded. Land use and management within protected areas is guided by existing park master plans, or interim management direction statements which provide temporary management direction for new protected areas, pending development of comprehensive park master plans.

Prior to adoption of the Kootenay/Boundary regional land use plan in March 1995, approximately 9.14% of the region's land base was in protected area status. As a result of the KBLUP, this amount was increased to approximately 13.88% of the region. There are seventeen new protected areas which have, or will be, formally designated as class A provincial parks pursuant to the BC *Park Act*. A list of the region's new protected areas and a description of general management guidance for the new areas is described in chapter 4.

Special Resource Management Zone (SRMZ)

This land use designation was assigned to areas with high concentrations of regionally significant and sensitive resource values, such as critical fish and wildlife habitat, ecosystems that are under-represented in the region's protected area system, important viewscapes, sensitive recreation areas and cultural heritage features. SRMZs communicate the general resource management priority to maintain the integrity of the numerous special and sensitive values that are known to exist in those areas. The specific locations of those resource values and corresponding management guidance for the resource values is identified in chapter 3 and in the appendices.

Resource development / extraction opportunities exist and are fully acceptable activities within the SRMZ designation, subject to the range of management objectives and strategies. However, compared to the IRMZ or ERDZ designations, resource development proposals within SRMZ areas may have more numerous conditions attached or greater consideration given due to the simple fact that a greater concentration of sensitive conservation-oriented values generally exist in SRMZ areas.

As indicated above, the KBLUP Implementation Strategy does not prescribe separate blanket policies, procedures or guidelines for resource exploration, development or use in the SRMZ designation. Rather land and resource management guidance, including guidance for SRMZ areas, is detailed in chapters 2 and 3 and the appendices (1-7).

Integrated Resource Management Zone (IRMZ)

The primary objective in the IRMZ designation is to balance environmental, economic and social benefits from the resource values within the zone. Resource management emphasis may vary throughout this designation, according to the distribution, availability and sensitivity of resource values. Chapter 3, through identification of resource management guidelines and cross-referencing to supporting resource value maps, and the plan appendices, identifies spacially specific resource management guidance in the IRMZ designation, to supplement the overall guidance provided by the regional objectives and strategies (chapter 2). Occupying the significant majority of the regional land base, lands in this designation supply extensive opportunities for most land use activities.

Enhanced Resource Development Zone (ERDZ)

Lands designated as ERDZ indicate the suitability or potential suitability of those lands for relatively intensive resource development activities, aimed primarily at regional economic development and community and work force stability. This land use designation is divided into two sub-categories: Coal ERDZs which signify a long-term, priority commitment of those areas to coal mining exploration and development; and Timber ERDZ, which signify the inherent suitability on those lands to undertake site-specific intensive forest management investigations and activities.

Stewardship of soil, water and air quality and areas of important environmental or recreational values (e.g., ungulate, fish, grizzly habitat, or recreational sites or features) that are located within the ERDZ designation is assured through application of FPC and other standard regulatory measures, including application of *Environmental Assessment Act* in the case of major, site-specific developments such as mining proposals.

Coal ERDZ -- This sub-category is located exclusively in the East Kootenays (concentrated in the Elk and Flathead river valleys). It encompasses areas of known coal reserves, existing coal mining facilities and infrastructure as well as areas for potential expansion. The Coal ERDZ designation signifies an assurance of long-term security of access and tenures to these lands for coal mining exploration and development purposes, contributing to investor confidence and general coal industry viability. Within the Coal ERDZs it is recognized that ecosystem function may be temporarily compromised by coal exploration, development, production or use activities on these lands. However, long term maintenance of environmental quality of all areas impacted will be addressed through innovative reclamation and mitigation technologies as determined through the permitting processes.

Timber ERDZ -- This sub-category is located on Crown lands and private TFL lands and is intended to balance constraints on timber harvesting resulting from objectives, strategies and guidelines for sensitive environmental and social values. Timber ERDZs have:

- average and above timber capability, and
- few intrinsic limitations to timber management (such as compaction hazard, slope instability or sedimentation risk), and
- an absence of regionally significant conservation values (such as provincially and/or regionally significant caribou habitat, high and intermediate biodiversity emphases, regional biodiversity connectivity corridors, community watersheds and regionally significant visual values), and limited ungulate winter range and grizzly bear habitat in that key areas for such values have been excluded.

Given these criteria that were used to identify the Timber ERDZ designation, it is evident that these lands possess comparatively high inherent potential for timber management activities, of the nature described in the Guidelines for Management of Enhanced Resource Development Zones (see chapter 3).

The Timber ERDZ areas are shown on Map 3.11, chapter 3, and indicates that site specific, intensive timber management activities are not necessarily limited to the ERDZ designation category - (just as site-specific opportunities for conservation-oriented management are not necessarily limited to the SRMZ category). Site-specific intensive timber management opportunities will also be located within IRMZ areas, and even in some locations within the SRMZ designation, depending on local circumstances. Lands within the Timber ERDZ areas do, however, represent priority areas for investigation of intensive timber management opportunities, given their general suitability for such activities.

Private Land

The privately owned land is primarily used for compact and dispersed residential, agricultural, private forestry, commercial, industrial, utility, transportation and institutional purposes. Settlement oriented uses on these lands are planned and regulated by local governments under authority of the *Municipal Act*.

Back to Table of Contents

•Top •Copyright •Disclaimer •Privacy •Government of British Columbia

W3C HTML 4.01

• Ministry Home • Government of British Columbia
Kootenay Region
Ministry of Sustainable Resource Management
The Minister News Search Reports & Publications Home Contacts

Kootenay/Boundary Land Use Plan

Implementation Strategy

Kootenay Inter-Agency Management Committee

June 1997

Chapter 2: General Resource Management Direction

The following regional objectives and strategies apply to all Crown land and natural resources, as well as private land within Tree Farm Licenses, in the Kootenay/Boundary region unless otherwise indicated. Given that certain resource activities (e.g., logging and mining) are not permitted in provincial parks, some of the regional objectives and strategies will only apply to Crown land outside of protected areas. However, it is necessary to cooperatively manage values both within the parks and the adjacent areas to ensure that parks can effectively protect the sensitive values contained within them. Therefore, appropriate regional objectives and strategies, particularly those associated with environmental, recreation and tourism values, will be incorporated in the management of parks (see Chapter 4).

The regional objectives and strategies are intended to provide broad, corporate guidance to agencies and resource users for managing the environmental, social and economic resources in the region and to guide agencies in the development of their individual and inter-agency program priorities.

Within some of the regional strategies, a regional target is provided, indicating a desirable or plausible resource production output, resource allocation amount, or a timeline within which the strategy is intended to be initiated or completed. Targets, where provided, represent approximate outcomes which are considered feasible. They should not, however, be interpreted as binding on the authority of statutory decision-makers to exercise their discretion in making resource management and administrative decisions for which they are responsible. **Where regional level targets are *not* provided within individual regional resource strategy statements, it is intended that the strategy will be implemented in an integrated manner, recognizing and considering the stated objectives, strategies and targets for other resource values.**

Some of the terminology used to describe regional objectives and strategies is relatively subjective and open to interpretation. Definitions of key terms are, therefore, provided in the glossary to promote consistent interpretation of the intent of regional strategies and objectives. It is recognized that a technical working glossary will need to evolve over time as issues surface in delivering the KBLUP Implementation Strategy.

Implementation of the regional objectives and strategies is intended to occur over time, in general conformance with the workplan to be developed annually by the Kootenay IAMC (see Chapter 6, section 6.2) through the annual budget development process.

ECONOMIC VALUES

A. TIMBER RESOURCES	
1. Maintain a sustainable, secure, long-term timberforest supply.	**1.1** The Provincial Forest Land Commission will maintain and manage the Forest Land Reserve designation over an area covering approximately ± 6.5 million hectares of productive forest land in the region, in accordance with the provisions of the *Forest Land Reserve Act*. **1.2** Subject to the range of objectives and strategies identified in this plan, specific strategies will be identified within the Forest Land Reserve, and especially within the ERDZ (T) for maintaining and increasing the regional land base that is available for timber management and supply. **1.3** Timber management activities will be recognized as appropriate land uses in all resource zones, outside of protected areas, while respecting other values.
2. Ensure the availability of the short term timber supply.	**2.1** Strive to achieve a minimum of two years of approved wood under cutting permits for all forest licensee tenure holders every year following plan approval. Develop a monitoring plan that facilitates corrective action. **2.2** Develop spatially explicit long term harvesting plans (20 years).
3. Consistent with the objectives and strategies within this plan, maximize the Maintain a sustainable supply of timber for harvesting.	**3.1** An inventory of timber resources will be improved and coordinated with other resource value inventories, consistent with evolving Ministry of Forests inventory standards. **3.2** A timber management strategy will be developed and implemented to mitigate the predicted falldown in the annual timber harvest levels that will occur over the short to midterm. The regional timber management strategy will be delivered through a combination of administrative structures, and will focus on: • silviculture systems and activities • restoration of damaged watersheds

	• rehabilitation of previously disturbed forest land (i.e., roads and landings) • research into harvesting techniques, estate modelling, non-recoverable losses, etc. • forest inventories **3.2.1** A portion of the Invemere Forest District "Enhanced Forest Management Pilot Project" will operationally examine the timber management strategy in addition to other forest management objectives as per the summary of the terms of reference in Appendix 5--Invermere Forest District. **3.3** The timber management strategy will guide future funding allocation within the enhanced forestry program of Forest Renewal B.C. **3.4** Timber management activities will be emphasized through use of the Timber Enhanced Resource Development Guidelines in appropriate areas initially within Enhanced Timber Resource Development Zones (Timber) (Chapter 3, section 3.11), with a view to increasing the allowable annual timber harvests while meeting the biodiversity emphasis assigned for that landscape unit. Further work will be undertaken to finalize suitable areas and ERDZ(t) boundaries. **3.5** Reasonable and attainable maximum acceptable annual fire loss objectives and reasonable and attainable annual pest damage objectives will be established. **3.6** In the short term (5-10 years) the KBLUP Implementation Strategy will deliver between 4.7 and 5.2 million cubic metres of timber annually. The higher end of this range will be attained if agencies, industry and other key groups succeed in adjusting to the challenge of meeting the intent of the various objectives, strategies and guidelines, including for ERDZ (t). This timber target may need to be modified due to implementation of related initiatives in the Job and Timber Accord. Also, the timber target may not equate to future AACs as the Chief Forester retains the sole responsibility for such determinations and may choose a different allowable harvest level.
4. Increase value-added employment in the timber sector.	**4.1** The long-term potential of value-added manufacturing will be promoted through the development and implementation of proven timber quality objectives and strategies for specific ecosystem types. **4.2** The value-added wood manufacturing sector will be expanded through a variety of initiatives, including

	revisions to the Small Business Bid Proposal sale criteria and pilot of a small scale salvage program in the Arrow Forest District. **4.3** The Kootenay-Boundary Value-Added Wood Manufacturing Association The Kootenay WoodVine will be supported as an a grouporganization that encourages communication among value-added producers and promotes cooperative marketing, training and business support. in the value-added area. **4.4** Efforts will be made to promote capturing the highest value from forest stands for all timber products (plywood, clear lumber, pulp, fine grained material, etc.).
5. Manage the timber resources in accordance with integrated resource management principles and practices.	**5.1** The responsible agencies will implement and administer the provisions of the *Forest Practices Code of British Columbia Act*, and associated regulations and guidebooks, as a primary means of ensuring the sustainable management of all forest resource values and ecosystems. **5.2** To facilitate FPC implementation, a regional landscape unit planning strategy, which identifies a schedule for finalization of landscape unit boundaries and objectives, will be prepared before September 30, 1997). by October 31, 1997.
6. Increase opportunities for alternative forestry operations.	**6.1** Where economically effective feasible and environmentally ecologically appropriate, (especially in locations within the special resource management area designation - see Map 1, Appendix 1) sensitive, innovative and labour-intensive approaches to timber harvesting and silviculture will be promoted. **6.2** The number of woodlots within the region will be increased by 47. Efforts will be made to locate new woodlots in close proximity to communities who have expressed interest in the woodlot program. Location and management of all woodlots will consider the range of objectives and strategies in this plan. **6.3** Opportunities for reducing, reusing or recycling wood residue and/or utilizing its energy value will be explored. **6.4** Where necessary, existing woodlots (established prior to June 1997) may be exempted from the seral requirements of the Forest Practices Code Biodiversity Guidebook. Where exemptions have been granted and old growth must be conserved, consider partial cutting of old growth (i.e., no requirement for interior conditions).
7. Maintain a viable	**7.1** The Christmas tree industry will be supported by

Christmas tree industry while ensuring integration with other resource values and users.	enhancing the management intensity and investment opportunities on existing tenures and considering innovative production techniques, (e.g., Christmas tree harvesting as part of the silviculture spacing program and ecosystem restoration). **7.2** The Christmas tree program will be reviewed to ensure Christmas tree production is maintained or increased. For new and existing Christmas tree permits this objective will be achieved by concentrating intensive management on the most suitable sites within the permit area. **7.3** Christmas tree culture plans, which will include rangeland and wildlife habitat values and ecosystem restoration, will be developed and implemented. **7.4** To address long term certainty, maintain the number hectares available for Christmas tree production but rationalize location and the Christmas tree culture plan to be more consistent with the objectives and strategies in this plan. New opportunities on Balsam/Spruce sites will be reviewed for potential subalpine fir production.
B. ENERGY RESOURCES	
8. Maintain opportunities for access to Crown land for potential development of oil and gas, geothermal resources and other energy-related projects.	**8.1** Opportunities for energy resource exploration and development will be made available on all lands outside of protected areas, subject to standard regulatory approval processes and conditions and in accordance with the range of KBLUP objectives and strategies. **8.2** Access to Crown land for energy exploration and development will be undertaken in conformance with the Oil and Gas Handbook and Guidelines, with a requirement for access development to demonstrate sensitivity to environmental, visual and recreational values, where these have been identified. **8.3** Lower level strategic planning processes will be provided with appropriate information on oil and gas and geothermal resource values, and other energy related projects, to ensure the integration of energy resource interests into the planning results.
9. Encourage development of regional energy resources to provide local employment and investment.	**9.1** The Ministry of Employment and Investment (Energy and Minerals Division) will support geological surveys and research, by industry, on subsurface resources.
C. MINERAL AND COAL RESOURCES	

10. Maintain a healthy investment climate to promote exploration and development of new mining opportunities.	**10.1** Opportunities for mineral and coal tenure acquisition, exploration, development and mining, including access development to those tenures, will be maintained on all lands outside of protected areas. **10.1.1** These same opportunities will be maintained for placer resources on all Designated Placer lands. **10.2** The Arrow Forest District Road Deactivation Pilot Project will be reviewed and amended as necessary, with the goal of developing and implementing a road deactivation consultation strategy throughout the region. **10.3** Existing "no staking" and "conditional" mineral, coal and placer reserves will be reviewed with the Kootenay IAMC with a view to amending or cancelling unnecessary or redundant reserves. **10.4** The coal, mineral and placer exploration and development permitting process will be streamlined through multi-agency protocols and Memorandums of Understanding. **10.5** Technical data and information will be provided to the exploration industry to promote new mineral and coal opportunities (e.g., industrial minerals and value-added technology).
11. Enhance security for the coal mining industry and associated communities.	**11.1** Coal-bearing and adjacent lands that support existing coal mining operations, and most lands containing short to mid-term coal resource needs, are designated as Enhanced Resource Development Zones (Coal). **11.1.1** Management emphasis in Coal ERDZs will be on coal mining and all related activities, in order to ensure long term regional and provincial economic benefits from the coal industry. **11.1.2** Within the Coal ERDZs it is recognized that ecosystem function may be temporarily compromised by coal exploration, development, production or use activities on these lands. However, long term maintenance of environmental quality of all areas impacted will be addressed through innovative reclamation and mitigation technologies as determined through the permitting processes. **11.2** Coal-bearing lands outside of Enhanced Resource Development Zones (Coal) are located within Integrated Resource Management Zones.

12. Ensure sound, responsible management of mineral, coal and placer resources.	**12.1** All mineral, coal and placer activities will be subject to standard regulatory approval procedures and conditions, including, in the case of major mining proposals, the *Environmental Assessment Act and Regulations* **12.1.1** Approval conditions, including bonding, will ensure required reclamation of disturbed sites is completed.
D. AGRICULTURE	
13. Maintain or enhance the current level of grazing activity.	**13.1** Grazing will be considered an appropriate Crown land use, subject to the terms and conditions identified in approved grazing tenures and range use plans and consistent with KBLUP objectives and strategies. Current grazing tenures in protected areas will continue and are transferable. **13.2** Livestock AUMs on Crown land in the Kootenay/Boundary region will be maintained at approximately 85,000. Maintaining this level is conditional on implementation of the Fire-Maintained Ecosystem Restoration Guidelines, the presence of local Coordinated Resource Management Planning or its equivalent, the continued presence of the Grazing Enhancement Fund, and continued access to silvicultural grazing. Livestock increases may occur when forage enhancements increase the sustainable carrying capacity, wildlife interests are met, and Rangeland Ecoystems principles (Sections 53-57) are adhered to. **13.3** The Fire Maintained Rehabilitation Project (see Guidelines for Restoration of Fire Maintained Ecosystems, Table 10, Appendix 2) will be implemented to maintain or increase grazing opportunities Fire maintained ecosystem restoration projects will be implemented in NDT4 areas (see Chapter 3, section 3.10). **13.4** Sites with high forage production potential within the Crown Agricultural Land Reserve (ALR) will be considered a priority for forage production enhancement and livestock use, while maintaining habitat and natural grassland integrity. **13.5** The Grazing Enhancement Fund will be utilized to help achieve the agriculture and rangeland objectives of this plan. **13.6** Ensure integrated and coordinated resource management planning at the local operational level.
14. Integrate grazing objectives with operational	**14.1**. A process will be developed for contacting range tenure holders operating within the Plan area to ensure

timber management activities.	optimum integration of timber harvesting and grazing objectives as stated in Range Use Plans and Silviculture Plans. Where appropriate, Silviculture Plans will detail specific measures to avoid livestock-related plantation damage and the breaching of natural or manmade barriers to livestock movement. Range Use Plans that encompass timber harvesting areas must also detail methods to minimize livestock damage to tree seedlings. **14.2** An operational trial will be initiated to explore the potential for improved timber/grazing integration.
15. Provide opportunities for existing farmers to improve the viability of agricultural operations through expansion onto arable Crown land.	**15.1** Arable lands within the Agriculture Land Reserve (ALR) will continue to be available through application under the *Land Act* in accordance with extensive agriculture and intensive agriculture policies administered by BC Lands. In accordance with government direction, agriculture use will receive priority emphasis for those lands within the ALR. **15.1.1** The policy guidelines of BC Lands relating to land alienation for agriculture will be reviewed with a view to ensuring appropriate agriculture opportunities result. Criteria will be established for: • defining agricultural land suitability • conservation and mitigation strategies • referral processes • approval mechanisms • multi-agency involvement in development plans
16. Maintain and reserve access to opportunities for water allocation for agricultural uses.	**16.1** Representatives of theLower level strategic planning processes will be provided with appropriate information on agricultural uses of water to ensure such needs are integrated with other land and resource activities.
17. Reduce agriculture/wildlife conflicts.	**17.1** Partnerships aimed at benefiting both wildlife and agriculture will be promoted between the agriculture industry and wildlife managers. **17.2** The province will continue to support wildlife-agriculture conflict resolution forums. **17.3** Wildlife population and habitat enhancement proposals will consider potential impacts on the agricultural sector. Similarly, livestock AUM increase and forage enhancement proposals will consider potential impacts on the wildlife resource.
18. Provide increased economic opportunities within the agricultural sector.	**18.1** A niche agricultural study will be undertaken to evaluate potential opportunities for expansion of economic benefits from the agriculture sector. Similar studies for new agricultural opportunities will be promoted.

E. Fish and Wildlife Resources	
19. Maintain sustainable and harvestable populations of fish and wildlife to provide long term and sustainable economic benefits to the region.	**19.1** An annual harvest of big game species and sport fish species will be maintained sufficient to provide fishing and hunting opportunities first for residents and secondly for non-residents. The Provincial Wildlife Harvest Strategy will guide the regulation setting process.
	19.2 Maintain inventories of fish and wildlife sufficient to calculate annual allowable harvests (AAH) that are ecologically sustainable and will not threaten harvest species.
	19.3 Encourage service industries that support fishing and hunting and provide them with input to and information about regulations.
	19.4 Encourage economic return from hunting/fishing activities by maintaining these activities over as large a percentage of the Crown land base as possible in order to provide a quality wilderness hunting/fishing experience and avoid overcrowding and associated problems.
20. Maintain a viable guide outfitting industry to service both resident and non-resident hunters.	**20.1** Maintain populations of big game animals sufficient to provide ecologically sustainable populations and to maintain a commercial harvest.
	20.2 Maintain the largest percentage of the annual allowable harvest (AAH) for resident hunters.
	20.3 Maintain a percentage of the AAH for commercial use consistent with ensuring the viability of the industry.
	20.4 Maintain the present tenure system for licensing of guide outfitters to both provide certainty for the industry and ensure sustainable distribution of activity across the land base.
	20.5 Provide the industry with sufficient information in a timely fashion to allow planning.
21. Ensure a viable angling guide industry to service both resident and non-resident anglers.	**21.1** Maintain populations of popular sport fish species and age classes to provide for a viable angling guide industry consistent with the Fisheries Program Strategic Plan.
	21.2 Classify and allocate fishing demand on those water bodies that become overcrowded and require regulation.
	21.3 Encourage industries that service sport fishing.
E. COMMERCIAL TOURISM	
22. Planning and design of timber harvesting, forest	**22.1** Planning and resource allocation decisions should consider tourism uses of Crown land and resources. These

management, and mineral exploration should consider affected tourism businesses and the resource needs of those businesses.	uses include visible landscape, tenures and licenses, and recreational infrastructure such as trails, campsites and roads. **22.2** Government agencies will work with tourism businesses holding Crown land tenures to identify areas of importance and resource management issues that should be considered in operational planning for logging and mineral exploration in tenured areas.
23. Planning and resource allocation decisions should regard commercial recreation as a valid and appropriate use of Crown land, subject to conformance with legislation and policy.	**23.1** Plans should identify areas with substantial potential to support commercial recreation on Crown land. Suitable areas of Crown land will be made available for frontcountry resort and commercial backcountry recreation operations. In assessing proposals to allocate Crown land for these purposes, efforts will be made to direct dispositions into suitable areas away from regionally significant biodiversity connectivity corridors, wildlife habitats and other areas important for conservation and *conflicting* resource use, as determined through referrals to resource *affected* agencies, and in general conformance with approved, comprehensive local land use plans. **23.2** Substantial proposals to allocate tenure or title to Crown land for commercial recreation will be referred to affected agencies and evaluated with consideration to issues including the following: • regional biodiversity connectivity corridors • wildlife habitat and conservation • recreation • other existing and potential resource uses • other provincial, regional, and municipal plans
24. Where consistent with laws, policy and plans, provincial parks should provide opportunities for commercial tourism.	**24.1** Existing commercial recreation uses (including heli-ski, heli-hiking and cat skiing operations) in provincial parks are acceptable, subject to compliance with management direction statements and park master plans. **24.2** Provincial park planning processes should examine potential commercial recreation opportunities within provincial parks.
F. SETTLEMENT, UTILITY & COMMUNICATION USES OF CROWN LAND	
25. Maintain opportunities for settlement, utility,	**25.1** In response to individual proposals, or through proactive marketing methods, suitable Crown land parcels

communication, and other site-specific uses of Crown land.	will continue to be allocated for settlement, utility, communication, access, cultivation, industrial uses, etc. Allocation of lands for settlement use should take into consideration the objectives defined in the Regional section 942.11 (Subsection 2) of the Growth Strategy legislation (Appendix A within this chapter) as well as regional district land use bylaws and official community plans and municipal plans. **25.2** The allocation of Crown Land for settlement purposes will primarily, although not exclusively, be delivered from Crown lands within municipal boundaries, regional district official community plan areas and settlement corridors (Chapter 3, section 3.13). **25.3** Provincial agencies will, as appropriate, participate in official community planning processes and regional growth management strategies initiated by local governments, to ensure that appropriate information on Crown land suitability for settlement and settlement-related purposes is incorporated. **25.3.1** Participation in growth management strategies, official community plans and rural land use bylaws will emphasize a proactive approach for integrating settlement with the full range of land use activities. **25.4** Lower level strategic plans may, where appropriate, also identify areas capable and suitable for settlement opportunities.
26. Recognize environmental conservation and other land use and resource management objectives when making decisions on the disposition of Crown land for settlement and other purposes.	**26.1** Proposals for allocating Crown land for settlement purposes will be reviewed on an integrated coordinated basis with other interested agencies. Where possible, allocations will be directed away from regional significant environmental or resource values, such as biodiversity connectivity corridors, key wildlife habitats and high capability agricultural lands or forest lands and areas of high mineral values or interests. **26.1.1** A coordinated approach to siting utility/transportation corridors will be promoted, particularly within regional biodiversity connectivity corridors, to minimize linear barriers to ecological values. **26.2** The siting of new landfills will respect the management requirements for wildlife (particularly wide ranging carnivores such as black and grizzly bears), water quality protection and the need to minimize the impacts of scavenger species in critical winter ranges and marshes.

G. ACCESS PLANNING AND MANAGEMENT	
27. Provide access, including roads, to accommodate commercial resource assessment, exploration and development.	**27.1** Access for resource uses will be accommodated on all lands outside of protected areas, subject to the range of KBLUP objectives and strategies and other applicable government statutes and policies.
28. Prevent or reduce conflicts between resource access developments and sensitive environmental, recreational and cultural heritage resource values and areas.	**28.1** Access for commercial resource exploration, development and use activities will be subject to the identification and implementation of management measures to mitigate undesirable effects of such activities on other sensitive resource values and areas. **28.2** An access map will be produced over time for each Forest District to identify access opportunities and restrictions for both public and industry uses of the provincial land base. **28.3** Legislative and policy tools will be developed to manage both economic and recreational use of roads and bridges.
29. Address area-specific access related issues.	**29.1** In the absence of comprehensive lower level strategic planning, the level of acceptable access will be assessed via a joint inter-agency process. Where no inter-agency consensus is attained, the regional dispute resolution process will be enacted. **29.2** Priority areas that are recognized as requiring an enhanced referral process and greater consideration for meeting the KBLUP management objectives and strategies, are identified through the Resource Management Zone objectives and strategies (Appendices 1 - 7). The process for addressing access requirements in such areas is summarized in the Access Management Guidelines, Chapter 3, section 3.12. **29.2.1** The list of priority areas for addressing access requirements will be reviewed annually and amended as necessary. A revised list will be identified in the annual report -- see Chapter 6, section 6.6. **29.2.2** Future priority areas to address access management issues will be evaluated and determined on the basis of screening criteria, including: • public expectations • degree of resource and conservation sensitivity and potential conflict

	• existing access • level of past investment into resource assessment/exploration/development • imminent or urgent resource development • availability/accuracy of information/inventory on resource values **29.3** A database will be maintained for all roads to enable the calculation of existing and future road densities. Ministry of Forests will conduct a pilot project in the Invermere Forest District. **29.4** Lower level strategic planning exercises that address access management issues will be conducted on a cooperative, inter-agency basis and be based on the Access Management Guidelines (Chapter 3, section 3.12).

SOCIAL VALUES

A. CULTURAL HERITAGE RESOURCES	
30. Conserve select cultural heritage resources. for scientific and educational purposes	**30.1** Archaeological and cultural heritage resource assessments will be undertaken in accordance with legislation and policy respecting the management of such resources. (i.e., a new protocol agreement between Ministry of Small Business Tourism and Culture and Ministry of Forests respecting cultural heritage resource management, the BC Archaeological Impact Assessment Guidelines - 2395, the *Heritage Conservation Act*, the *Environmental Assessment Act*, and the *Forest Practices Code of British Columbia Act*, especially the *Forest Planning Regulation*. **30.2** Archaeological overview assessments will be conducted, where appropriate, to assess cultural resource potential, in order to provide input into subsequent planning at both the strategic and operational levels. **30.3** Archaeological impact assessments will be undertaken and appropriate impact management measures (i.e., buffering, avoidance, access controls, signage, mitigation) will be applied as required, in response to requirements identified through Archaeological Overview Assessments, land/resource planning processes, implementation of the provincial *Environmental Assessment Act*, and to development proposals referred to the Archaeology Branch, Ministry of Small Business Tourism and Culture, by the public or private sectors. In the interim, Archaeological Impact

	Assessments will focus on high potential sites as defined by Archaeological Overview Assessments. **30.4** Government will continue to support the Traditional Use Site Inventory study process. Archaeological Overview Assessments will be complemented by the results of the Traditional Use Inventory. **30.5** Aboriginal traditional use sites will, as appropriate, be designated as provincial heritage sites under the *Heritage Conservation Act*. **30.6** The Heritage Branch, Ministry of Small Business, Tourism and Culture, will cooperate with appropriate municipal governments, agencies and interest groups to identify and conserve appropriate historic sites, trails, buildings and other structures through designation under the *Heritage Conservation Act*. **30.7** The locations of known cultural heritage sites will be identified on appropriate government reference maps as map notations except those recognized as confidential.
31. Ensure aboriginal rights are not unjustifiably infringed upon by resource development activities of the Crown or its licensees.	**31.1** Consultation with First Nations, as per government policy, will be undertaken for resource management activities which directly affect traditional territories.
32. Encourage development of cultural heritage interpretative facilities and programs.	**32.1** Opportunities for the development of interpretative facilities and programs will be assessed in cooperation with First Nations and local governments. **32.2** Lower level strategic planning processes will consider signage to identify sites as significant cultural heritage features, and to guide visitor use.
B. COMMUNITIES	
33. Integrate community objectives respecting **community stability, economic diversification and employment opportunities** into Crown land and natural resources planning and decision-making.	**33.1** Crown land and resource planning and decision-making processes will identify measures to minimize and mitigate impacts on communities that may be potentially affected by land and resource allocation and management decisions. Economic diversification and community support initiatives will be emphasized where resource dependent communities are experiencing impacts requiring a transition strategy to be implemented. **33.2** Community stability will be enhanced over the next decade through adoption of landscape level plans which will contribute to the certainty of the timber supply and will address site-specific issues for access for a range of

	resource activities and development. **33.3** Development of solid and liquid waste management plans will be promoted as part of watershed management planning processes for community and domestic watersheds.
34. Maintain or enhance employment opportunities and provide economic and social transition measures where needed to maintain community stability.	**34.1** Appropriate government agencies will collaborate with communities and private industry in planning and delivering economic and social development programs and initiatives (e.g., Forest Renewal BC, the Grazing Enhancement Fund, the Canada/BC Infrastructure Program, and the BC 21 program.) **34.2** As part of the BC Skills Now program, Community Skills Centers will be established and maintained.
35. Minimize risk to lives and property from flooding, erosion and wildfires.	**35.1** Alluvial and debris torrent fan hazards will be identified. Where appropriate, mitigation techniques to reduce hazards will be implemented and settlement will be directed away from these areas. **35.2** Watershed assessment will be performed on a priority basis of watersheds upstream of high hazard settlement areas. **35.3** Alternative methods of fuel management will be promoted to assist in the prevention of wildfire and reduce associated damage.
C. OUTDOOR RECREATION	
36. Manage Crown land to provide a range of outdoor recreation settings.	**36.1** Recreational settings are described in this section using the Ministry of Forests Recreation Opportunities Spectrum (ROS). All strategies refer to long-term management; they do not preclude roads and extractive resource development, though they should guide post-operation access management and restoration. These strategies do not refer to access management of Crown land for wildlife. **36.2** Alpine and sub-alpine areas should be managed to achieve an ROS classification of Semi-Primitive Non-Motorized. Mechanized uses including snowmobiling, heli-ski and cat-ski may be acceptable subject to existing tenure, local plans and agreements, and wildlife habitat concerns. **36.3** Inoperable terrain below the sub-alpine should be managed to achieve an ROS classification of Semi-Primitive.

	36.4 Most operable Crown land outside protected areas will be managed to an ROS classification of Roaded Resource Land or Semi-Primitive Motorized. Some areas of high recreational value, named in Appendices 1 - 7, should be managed such that portions of those areas achieve an ROS classification of Semi-Primitive Non-Motorized.
37. Manage Crown land to maintain recreation features and provide new trails, campsites and related infrastructure.	**37.1** Backcountry recreation corridors, sites and use areas should be managed according to Chapter 3, section 3.9 of this plan. **37.2** Strategies and plans should be developed to address management of specific recreation resources and facilities. Priority should be given to strategies for long distance snowmobile trails, recreational river corridors and hiking trails. **37.3** Official heritage designation under the *Heritage Conservation Act* should be established for portions of the Howse, Athabasca and Dewdney Trails. Under this designation, trails would be managed according to 'heritage trail management plans' developed under the protocol agreement between the Ministry of Forests and the Ministry of Small Business, Tourism and Culture regarding heritage trails. **37.4** Nominated rivers will be evaluated with the goal of identifying and nominating candidates for heritage river status under the *Heritage Rivers Act*.
D. VISIBLE AREAS	
38. Design of timber harvesting, forest management and mineral exploration should reflect the importance of front country landscapes to communities, recreation and tourism.	**38.1** Areas visible from main paved highways, recreation waterways and communities should be designated as "known scenic areas" under the FPC. **38.2** Guidelines for management of frontcountry visual areas (Chapter 3, section 3.8) establishes design intent for timber harvesting, forest management and mineral exploration in known scenic areas. **38.3** In consultation with affected communities and businesses, Ministry Forest District Managers should establish Visual Quality Objectives for known scenic areas. Standards for these VQOs should be consistent with management guidelines identified above. **38.4** *W*Alternative silvicultural systems, (e.g., selection harvesting, shelterwood, seed trees), single and group selection, should be favoured, where possible and appropriate, in known scenic areas., as indicated on

	map ?? in Appendix 1. **38.5** Circumstances such as fire and insect or disease outbreak may necessitate logging in known scenic areas which does not conform to the guidelines (Chapter 3, section 3.8). Good visual design will, however, be required for all work under these circumstances. **38.6** Mineral exploration and mine development may result in visual disturbance that does not conform to the guidelines. Good visual design should be applied to such work. **38.7** Further timber harvesting in existing cutblocks may be promoted as a means to improve visual design within some known scenic areas. **38.8** Local biophysical conditions on individual landscapes will be assessed to determine the tree height required to achieve visually effective greenup in known scenic areas.
39. Planning and design of timber harvesting, forest management and mineral exploration in backcountry areas should consider visual landscape quality.	**39.1** Chapter 3 (section 3.9) provides guidelines for management of backcountry recreation features and facilities. These guidelines include provisions for visual management of resource development activities. Design and planning for timber harvesting, forest management and mineral exploration should be consistent with these guidelines. **39.2** Where possible, design of cutblocks and roads outside scenic areas and other areas explicitly managed for visuals should reflect principles of good visual design.

CONSERVATION VALUES

A. GENERAL ECOSYSTEM HEALTH	
40. Maintain healthy, functioning ecosystems that are essential to the diversity, abundance, distribution and life histories of fish, wildlife, vegetation and water resources.	**40.1** A regional biodiversity benchmark will be maintained which identifies benchmark management regimes and ranks habitats that are critically important to the maintenance of regional ecosystems. The regional biodiversity benchmark will be used to evaluate risk from this land use plan and report on the risk to protection, conservation and restoration of critical habitats. **40.1.1** A regional monitoring program will be developed and implemented to track progress (over space and time) relative to the environmental objectives identified in this plan, and relative to the regional biodiversity benchmark.

Study plots will be identified in protected and non-protected areas as a basis for researching and monitoring ecological change.

40.1.2 An environmental supply review will be developed to contribute to the amendment of land and resource management plans and policies, and to conserve and protect healthy functioning ecosystems. The environmental supply review and the timber supply review will utilize the same definition of current management.

40.2 An ecosystem-based approach to land and resource planning and management will be applied. In addition to other resource legislation, regulations and policies, the *Forest Practices Code of British Columbia Act* (FPC), will be used as a primary means of implementing an ecological approach to land and resource planning and management.

40.3 A regional inventory plan will be developed that identifies and ranks information and mapping needed to support planning and management of terrestrial and aquatic ecosystems, and to support the development of air and water quality objectives. The regional inventory plan will identify decision criteria for collecting information on presence/absence, abundance, distribution, life history, and meta-population dynamics of species, associations and communities.

40.4 Landscape unit planning will be consistent with the FPC Biodiversity Guidebook and policy for identification of landscape unit boundaries and associated biodiversity emphasis options. This regional land use plan will use the interim landscape unit boundaries and biodiversity emphasis options identified in Chapter 3, section 3.2. A landscape unit planning strategy will be developed by October 30, 1997, which will identify the process and schedule for finalizing landscape unit specific objectives.

40.5 Consumptive uses (i.e. hunting, angling, water allocation, waste emissions) of environmental values will be regulated within the priority to maintain healthy, functioning ecosystems and populations.

40.6 Where private lands provide an important contribution to the maintenance of terrestrial or aquatic ecosystem values, efforts will be made to coordinate public/private land planning and management, and to encourage appropriate conservation measures on private

	land. A private land acquisition program will be initiated to identify critical areas and the means to secure them, should such lands become available. **40.7** The introduction of non-indigenous plant and animal species into ecosystems will be severely restricted. Over time, efforts will be made to eliminate identified non-indigenous species through ecosystem restoration measures. **40.8** Communication and consultation with the general public, industry, local government agencies and environmental user groups will aim to encourage awareness and voluntary compliance with environmental regulations, and adoption of codes of conduct that are consistent with environmental conservation objectives and strategies in this plan. **40.9** Hunting, fishing and trapping will continue to be managed to achieve ecosystem health objectives and strategies.
41. Protect, conserve, and reduce risks to rare, threatened and endangered terrestrial and aquatic species.	**41.1** In cooperation with the provincial conservation data centre, information will be obtained on rare, threatened and endangered species. The information will be used to monitor, protect and conserve species at risk. **41.2** Inventories of key habitat areas and populations for red and blue listed species will be prepared and maintained and will be integrated into land and resource planning and decision-making processes at all levels. **41.3** Species recovery plans for red, blue or regionally extirpated species will be prepared and implemented. Red, blue and regionally significant or extirpated species that are affected by forest or range practices will be considered candidates for designation as identified wildlife species under the FPC (Appendix B within this chapter). Essential habitats for these species will be identified and considered for designation as either wildlife habitat areas or sensitive areas under the FPC, and addressed in landscape unit objectives. **41.4** Critical habitats of red and some blue listed species will be protected, conserved or restored, through Goal 2 of the Protected Areas Strategy in the West Kootenays, or provisions under the FPC, as required, to manage to the desired habitat condition.
42. Maintain the quality, integrity and connectivity of	**42.1** The natural grassland communities will be restored and maintained. (See also Rangeland Ecosystems, section

grassland habitats so as to support the associated red and blue listed species.	D). **42.2** Grazing management regimes will integrate requirements for sensitive wildlife habitat areas that are mapped and identified in approved range and forest development plans. (See also Rangeland Ecosystems, section D).
43. Maintain wildland attributes necessary for ecosystem health through coordinated access planning for resource development and associated activities.	**43.1** Site specific access issues will be addressed through lower level strategic planning in a cooperative, integrated method and consistent with the Access Management Guidelines (Chapter 3, section 3.12).
B. TERRESTRIAL ECOSYSTEM HEALTH	
44. Maintain the regional diversity and a suitable abundance of native terrestrial species of plants and animals, and the ecosystems upon which they depend.	**44.1** A regional network of protected areas, regional scale connectivity corridors, landscape level forest ecosystem networks (FENS), old growth management areas, wildlife tree patches, riparian reserves and appropriate levels of coarse woody debris will be developed and maintained through MOUs for FDPs to provide opportunities for the distribution of species, populations and genetic material. **44.2** Management direction statements and park master plans developed for new protected areas will be consistent with conservation biology principles, enable scientific research into natural systems, and encourage the use of protected areas as a comparative benchmark for monitoring ecological change. **44.3** Where appropriate, resource planning objectives and strategies on lands adjacent to, and within, protected areas will be managed to objectives which are consistent with one another within the context of BEO's, FPC guidelines and Regional MOU's. **44.4** The prevention or minimization of fragmentation of lands suitable for regional level connectivity corridors (i.e., under represented ecosystems and key habitat areas) will be managed through the application of the connectivity guidelines (Chapter 3, section 3.3). **44.5** Old growth management areas (as per FPC) will be identified, preferably within or in close proximity to regional connectivity corridors and landscape forest ecosystem networks, and will be managed to maintain appropriate interior forest habitat conditions, as per the FPC Biodiversity Guidebook.

44.6 The East Columbia Lake, Hamling Lakes and Midge Creek Wildlife Management Areas will be established. Cooperative inter-agency management plans for these areas will be developed and implemented.

44.7 Corridors will be managed and used, in accordance with the biodiversity emphasis levels established for those areas (Chapter 3, section 3.2), to provide interim management of connectivity requirements until landscape unit boundaries and objectives are finalized.

44.8 Site-specific resource development activities will, where possible, be designed to resemble the shape and pattern of natural disturbances, except where otherwise intended by this plan, e.g., in ERDZ. Patch size distribution, as defined in the Biodiversity Guidebook, will be deployed to emulate natural disturbance patterns.

44.8.1 In order to implement the patch size concept the following two strategies will be implemented:

a) the general adjacency height (outside of scenic areas and community watersheds) will be changed from 3m to 2m;

b) the maximum clearcut size will be modified to be consistent with the patch size concepts in the FPC Biodiversity Guidebook.

44.9 The coverage, accuracy and resolution of terrestrial ecosystem mapping will be upgraded over time, giving priority to areas of high resource conflict.

44.10 Landscape unit objectives will consider management of deciduous leading stands such as cottonwoods, aspen and birch for purposes such as biodiversity management.

44.11 Wildlife habitat areas as defined in the Identified Wildlife Guidebook will be established adjacent to alpine and subalpine environments to provide security/escape cover for animals using alpine habitats.

44.11.1 Road access development in key alpine habitats will be managed with mitigation standards and procedures, as they relate to regulated closure, reclamation and rehabilitation, to be pre-determined prior to approval.

44.11.2 Snowmobile use in key alpine habitats will be

	restricted to minimize conflicts with wildlife.
45. Maintain the diversity and a suitable abundance of wide ranging carnivore populations and the ecosystems upon which they depend.	**45.1** The quantity and quality of wide ranging carnivore habitat capability/suitability mapping will be upgraded, with a priority on grizzly bears. **45.2** Prey species will be maintained at levels necessary to maintain viable populations of wide ranging carnivore species. **45.2.1** Viable populations of prey species will be maintained through the implementation of the FPC and hunting and trapping regulations. **45.3** Grizzly bear management plans and management areas will be established in accordance with the provincial grizzly bear conservation strategy. A recovery plan will be implemented in Grand Forks District to re-establish grizzly bears into traditional range. The plan will include design criteria for habitat mapping, habitat restoration and habitat enhancement. Consistent with provincial policy direction, grizzly bear management areas, and associated management strategies, will not result in additional constraints on the regional timber supply in the short term. **45.3.1** Priorities for grizzly bear inventory, management and planning will be in those areas where populations are most at risk. **6.4 A recovery plan will be implemented in 45.4** Grizzly bear management guidelines will be implemented in areas in the region with known high grizzly densities and known high risk areas (Chapter 3, section 3.4). **45.5** Lower level strategic planning will incorporate information on grizzly bear densities, habitat and movement, with a view to maintaining target road densities (Chapter 3, section 3.4) for key high density or high risk grizzly areas. **45.6** F Carnivore ood production (e.g., berries) will be encouraged in timber silviculture prescriptions in key grizzly areas. Herbicides will not be used for forest management on key forage areas, unless the forage opportunities are maintained or enhanced. **45.7** The Kootenay problem bear translocation policy will be implemented and will identify translocation opportunities in the event that public safety issues arise. A

	list of possible sites will be identified in the annual MOU. Coordinated access management planning **45.8** Bear/human conflicts will be minimized through hunting, access management planning, proper landfill planning and enforcement, and adequate trail and campground design in recreation areas.
46. Maintain viable populations of mountain caribou.	**46.1** Mountain Caribou Guidelines will be applied in key caribou habitat (Chapter 3, section 3.6) at the stand and landscape level. Landscape unit objectives and Forest Development Plans should reflect the intent of the Caribou guidelines. **46.2** In areas where caribou habitat overlaps with ungulate winter range, the management for caribou, including application of the mountain caribou guidelines, will take precedence. **46.3** Lower level strategic plans will identify calving areas and principal summer habitats and will incorporate information on mountain caribou densities, habitat and movement with a view to maintaining target road densities (Chapter 3, section 3.6) within such areas. **46.44** Guidelines will be prepared and implemented for heli/cat ski operators to minimize disturbance of mountain caribou populations in winter habitat areas with respect to recreation and commercial tourism, in particular, snowmobiling activities.
47. Maintain the diversity and a suitable abundance of ungulate species and the habitats on which they depend.	**47.1** The quality of regional information on species-specific habitat requirements and ungulate habitat capability will be upgraded, over time, through field research and inventory mapping, and will modify the guidelines annually for use in the MOU for FDP's. **47.2** Ungulate management guidelines will be applied to key ungulate winter habitat areas (Chapter 3, section 3.5). **47.3** Ungulate forage and habitat enhancement measures (e.g., prescribed burning) will be undertaken in key winter range and habitats, , *other than winter range,* or as determined throughlocal lower level strategic level planning and ongoing environmental program delivery initiatives. **47.4** Coordinated access management planning Lower level strategic planning will incorporate information on ungulate habitats and movement, with a view to reducing stress and displacement of wintering ungulates and

	maintaining target road densities (Chapter 3, section 3.5). **47.5** Road and rail kill of ungulates will be minimized through cooperation between BC Environment and the authorities responsible for design and maintenance of highways and railways, and through driver education.
48. Maintain and diversify the recreational value of ungulateswildlife.	**48.1** Quality sport hunting opportunities of ungulates (other than mountain caribou) will continue to be offered to residents and non-residents of British Columbia. **48.2** Wildlife viewing will be encouraged at times and places that do not put undue stress on wildlife species and populations.
B. AQUATIC ECOSYSTEM HEALTH	
49. Protect and conserve aquatic ecosystem functions and processes.	**49.1** A regional aquatic conservation strategy will be developed to guide decisions on the protection, conservation, restoration and monitoring of aquatic ecosystems incorporating Goal 2 of the Protected Area Strategy in the West Kootenay, and the implementation of the FPC. This strategy will incorporate the concepts of integrated watershed planning and management. **49.1.1** A non-point source pollution abatement strategy will be developed and adopted for non-forestry related land based activities. **49.2** Watersheds and wetlands requiring restoration will be inventoried, prioritized and rehabilitated, primarily through the watershed restoration program of Forest Renewal B.C. Rehabilitation in fish bearing streams will include wild stock population enhancement and measures to restore sources of large organic debris and streamside vegetative cover. **49.3** Riparian reserves and management areas will be managed according to FPC regulations and the standards and guidelines established in the FPC Riparian Management Guidebook. **49.4** A regional lake classification system will be implemented as per the FPC. **49.5** A wetland classification strategy will be developed and implemented to protect and conserve wetland riparian ecosystems. **49.6** Selected lakes, which currently do not contain fish, will be managed to prevent fish introductions so as to

	maintain their ecological integrity and serve as baseline indicators of these aquatic ecosystems.
50. Ensure the sustainability of fish species diversity and populations, especially wild fish stocks.	**50.1** Implement the regional fisheries strategic plan which identifies management objectives and strategies for specific fish species. **50.2** Where appropriate, watershed analysis will be performed on regionally significant fish streams using the FPC Interior Watershed Assessment Procedure to define appropriate watershed-specific strategies for maintaining/restoring in-stream flows and sediment regimes. **50.3** The quality of regional fish habitat inventories (including non-sport species) will be upgraded over time, as a basis for identifying and ranking sensitive/critical fisheries areas (e.g., reaches, pools, rearing areas, spawning areas, migration limits) that require protection and site-specific management action. **50.4** On the basis of inventories, and through landscape level planning, appropriate fish habitats will be designated as sensitive areas or be classified under the FPC Identified Wildlife Guidebook as wildlife habitat areas. **50.5** Roads that cause chronic negative impacts to fish (e.g., sedimentation) will be assessed and ranked for adequate maintenance or permanent de-activation, as part of coordinated access management planning initiatives. **50.6** In-stream water flows that are adequate to maintain fish stocks will be maintained determined. Consideration of these requirements will be incorporated into water licensing mechanisms.
51. Provide reasonable access to potable **water for human consumption** Maintain water quality, quantity and timing of flow at appropriate levels in community and domestic use watersheds.	**51.1** Areas officially designated as community watersheds will be managed in accordance with the Community Watershed Guidebook under the FPC. There will be annual reviews of the existing provincial list of community watersheds to determine additions or deletions. Currently defined community watersheds are identified by Forest District in Appendices 1 - 7. **51.2** Domestic Watershed Guidelines will guide timber and subsurface access and resource development activities in domestic use watersheds (i.e., non community watersheds) (Chapter 3, section 3.7). **51.3** Contingency measures should be available for domestic or community water supplies to be remediated if

	damaged by resource development. **51.4** Priority will be given to Water quality monitoring programs will be implemented in community watersheds and other high priority areas through a process of needs identification and prioritization. **51.4.1** Water quality, quantity and timing of flow objectives will be developed in selected watersheds. water quality in designated community watersheds **51.5** Engineering guidelines for the construction and maintenance of domestic water supply systems will be developed and promoted. **51.6** The means to share authority with regional governments in the regulation of water sue use and the protection of water quality, within designated pilot areas will be explored. **51.7** Water management plans will be prepared in high conflict areas as a component of landscape unit plans. These plans will guide water licensing decisions, community development planning and will provide information to other resource planning processes.Water management plans will be prepared in high demand watersheds as a basis for guiding water licensing decisions, and to feed into local government and operational resource planning processes **51.8** The merits of requiring all domestic water use to be licensed will be assessed and, if deemed appropriate, amendment of the *Water Act* will be proposed. **51.9** Roads that cause chronic negative impacts to domestic water use will be assessed and ranked for maintenance or permanent deactivation as part of coordinated access management planning initiatives.
C. AIR QUALITY	
52. Maintain air quality within established national and provincial criteria.	**52.1** Airshed management plans will be initiated. **52.2** Industrial emissions (e.g., does not include range and wildlife burns) to airsheds will be limited through pollution prevention initiatives or enforcement of the permits or approvals under the *Waste Management Act* permitting provisions. **52.3** Communities with poor air quality will be given high priority for ambient air quality monitoring.

	52.4 Partnerships with communities and special interest groups will be developed to assist with the development of air quality management plans, and to target actions on localized sources of air contaminants (e.g., agricultural burning and smoke emissions from residences).ntial burning). **52.5** Assistance will be provided to the forest industry to phase-out the use of beehive burners and to identify alternatives for woodwaste disposal.
D. RANGELAND ECOSYSTEMS	
53. Maintain highly diverse and contiguous rangelands.	**53.1** Grazing regimes for rangelands will be planned and managed according to ecosystem management principles and in response to site-specific information generated through monitoring initiatives. **53.2** Range Reference Areas will be developed and maintained as a basis for determining potential natural communities. **53.3** The comprehensive noxious weed management program will be implemented. Opportunities to expand implementation to cover all land jurisdictions will be explored. **53.4** Vehicle use will be managed in a coordinated fashion on Crown rangeland areas to minimize negative effects on rangeland values. **53.5** Proposals for new livestock grazing tenures in alpine grassland ecosystems (AT, AT/ESSFdkp and ESSFdkp) will not generally be accepted. Any such proposals will be closely scrutinized for ecosystem benefits, and any new permits issued will be subject to rigorous monitoring. **53.6** Rangeland ecosystem management in protected areas and regional connectivity corridors will occur according to the Seral Stage Guidelines (Appendix C). **53.7** Official Community Plans should consider grassland conservation in their zoning.
54. Manage rangeland ecosystems within the limits of their sustainable carrying capacity.	**54.1** Forage production and forage removal by both livestock and wildlife will be monitored on an ongoing basis. Management of forage will be modified, as appropriate, based on the monitoring results. **54.2** A sufficient proportion of annual forage production

	will be retained to ensure rangeland productivity and health. The balance of annual forage production will be appropriately allocated between wildlife and livestock. **54.3** The distribution of rangeland habitats will be maintained over space and time. **54.4** Management strategies and tools (e.g., range riding, salting and water availability or intercept ranges and habitat enhancement) will be applied to enhance the temporal and spatial distribution of livestock and wildlife species within rangeland ecosystems. **54.5** Management strategies for critical grassland areas outside of livestock grazing areas will be developed and implemented. **54.6** The Grazing Enhancement Fund will be utilized to help achieve the agriculture and rangeland objectives of this plan.
55. Restore rangeland by reducing current and historic forest ingrowth.	**55.1** A healthy balance between timber and grassland resources will be restored in natural disturbance type 4 (NDT4) areas by creating large openings and widely-spaced trees, with a preponderance of mature and old trees and a minimum of regeneration. **55.2** The A fire maintained ecosystem restoration program will be implemented in NDT4 areas (Chapter 3, section 3.10). Where ungulate winter range overlaps with NDT4, the management for fire maintained ecosystems, including the application of those guidelines, will take precedence. **55.3** A forest ingrowth inventory of NDT4 areas in Arrow and Boundary Forest Districts will be developed and implemented, as a basis for restoration projects in those areas.
56. Maintain and restore the integrity of riparian areas.	**56.1** Riparian management monitoring and demonstration projects will be developed and undertaken so as to provide information to the implementation processes. **56.2** Important riparian areas that need restoration from livestock and other sources of damage will be identified, and suitable rehabilitation and alternate management strategies will be developed and implemented.
57. Ensure all rangeland-dependent rare species are identified and maintained in a viable state.	**57.1** Inventories will be compiled on the presence, location and status of rare animal and plant species and communities in rangeland ecosystems.

	57.2 Management programs for rare animal and plant communities in rangeland ecosystems will be developed and implemented.

Appendix A Application and content of Regional Growth Strategy

Purpose of regional growth strategy

942.11 (1) The purpose of a regional growth strategy is to promote human settlement that is socially, economically and environmentally healthy and that makes efficient use of public facilities and services, land and other resources.

(2) Without limiting subsection (1), to the extent that a regional growth strategy deals with these matters, it should work towards but not be limited to the following:

(a) avoiding urban sprawl and ensuring that development takes place where adequate facilities exist or can be provided in a timely, economic and efficient manner;

(b) settlement patterns that minimize the use of automobiles and encourage walking, bicycling and the efficient use of public transit;

(c) the efficient movement of goods and people while making effective use of transportation and utility corridors;

(d) protecting environmentally sensitive areas;

(e) maintaining the integrity of a secure and productive resource base, including the agricultural and forest land reserves;

(f) economic development that supports the unique character of communities;

(g) reducing and preventing air, land and water pollution;

(h) adequate, affordable and appropriate housing;

(i) adequate inventories of suitable land and resources for future settlement;

(j) protecting the quality of ground water and surface water;

(k) settlement patterns that minimize the risks associated with natural hazards;

(l) preserving, creating and linking urban and rural open space including parks and recreation areas;

(m) planning for energy supply and promoting efficient use, conservation and alternative forms of energy;

(n) good stewardship of land, sites and structures with cultural heritage value.

Appendix B

Kootenay/Boundary Region Red and Blue-Listed and Key Regionally Significant (Yellow-Listed) Wildlife Species under consideration as Identified Wildlife through the Forest Practices Code

COMMON NAME	SCIENTIFIC NAME	STATUS
Amphibians		
Coeur d'Alene salamander	*Plethodon idahoensis*	R
Tailed frog	*Ascaphus truie*	B
Northern leopard frog	*Rana pipiens*	R
Spotted frog	*Rana pretiosa*	Y
Reptiles		
Painted turtle	*Chrysemys picta*	B
Rubber boa	*Charina bottae*	B
Birds		
Eared grebe	*Podiceps nigricollis*	Y
Western grebe	*Aechmorphorus occidentalis*	R
American white pelican	*Pelecanus erythrorhynchos*	R
American bittern	*Bautaurus lentiginosus*	B
Great blue heron	*Ardea herodias*	B
Trumpeter swan	*Cygnus buccinator*	B
Wood duck	*Aix sponsa*	Y
Harlequin duck	*Histrionicus histrionicus*	Y
American avocet	*Recurvirostra americana*	B
Long-billed curlew	*Numenius americanus*	B
Common golden eye	*Bucephala clangula*	Y
Bufflehead	*Bucephala albeola*	Y
Barrow's goldeneye	*Bucephalia islandica*	Y
Turkey vulture	*Cathartes aura*	B
Bald eagle	*Haliaeetus leucocephalus*	Y
Northern harrier	*Circus cyaneus*	Y
Sharp-shinned hawk	*Accipiter striatus*	Y
Cooper's hawk	*Accipiter cooperii*	Y

Northern goshawk subsp. *atricapillus*	*Accipiter gentilis atricapillus*	Y
Broad-winged hawk	*Buteo platypterus*	B
Swainson's hawk	*Buteo swainsoni*	B
Peregrine falcon subsp. *anatum*	*Falco peregrinus anatum*	R
Prairie falcon	*Falco mexicanus*	R
Sharp-tailed grouse subsp. *columbianus*	*Tympanuchus Phasianellus columbianus*	B
Sandhill crane	*Grus canadensis*	B
Upland sandpiper	*Bartramia longicauda*	R
Forster's tern	*Stern forsteri*	R
Flammulated owl	*Otus flammeolus*	B
Western screech owl subsp. *macfarlanei*	*Otus kennicottii macfarlanei*	B
Northern pygmy owl	*Glaucidium gnoma+B130*	Y
Long-eared owl	*Asio otus*	Y
Short-eared owl	*Asio flammeus*	B
Northern saw-whet owl	*Aegolius acadius*	Y
Vaux's swift	*Chaetura vauxi*	Y
White-throated swift	*Aeronautes saxatalis*	B
Black-chinned hummingbird	*Archilochus alexandri*	Y
Lewis' woodpecker	*Melenerpes lewis*	B
Williamson's sapsucker subsp. *nataliae*	*Sphyrapicus throideus nataliae*	R
Pileated woodpecker	*Dryocopus pileatus*	Y
Brown creeper	*Certhia americana*	Y
Canyon wren	*Catherpes maxicanus*	B
Western bluebird	*Sialia mexicana*	Y
Golden-crowned kinglet	*Regulus satrapa*	Y
Red-eyed Vireo	*Vireo olivaceus*	Y
Grasshopper sparrow	*Ammodramus savannarum*	R
Bobolink	*Dolichonyx oryzivorus*	B
Mammals		
Silver-haired bat	*Lasionycteris noctivagans*	Y
Hoary bat	*Lasiurus cinereus*	Y
Northern long-eared myotis	*Myotis septentrionalis*	R
Fringed myotis	*Myotis thysanodes*	B
Townsend's big-eared bat	*Plecotus townsendii*	B
Southern red-backed vole subsp. *galei*	*Clethrionomys gapperi galei*	B
Southern red-backed vole (other subsp.)	*Clethrionomys gapperi*	Y
Northern pocket gopher subsp.	*Thomomys talpoides segregatus*	R

segregatus		
Least chipmunk subsp. *oreocetes*	*Tamias minimus oreocetes*	B
Least chipmunk subsp. *selkirki*	*Tamias minimus selkirki*	R
Red-tailed chipmunk subsp. *simulans*	*Tamias reficaudus simulans*	R
Red-tailed chipmunk subsp. *ruficaudus*	*Tamias ruficaudus ruficaudus*	R
Wolverine subsp. *luscus*	*Gulo gulo loscus*	B
Marten	*Martes americana*	Y
Fisher	*Martes pennanti*	B
Badger	*Taxidea taxus*	B
Grizzly bear	*Ursus arctos*	B
Mountain goat	*Oreamnos americanus*	Y
Bighorn sheep subsp. *canadensis*	*Ovis canadensis canadensis*	B
Moose	*Alces alces*	Y
Elk subsp. *nelsoni*	*Cervus elaphus nelsoni*	Y
Mule Deer	*Odocoileus hemionus hemionus*	Y
White-tailed deer	*Odocoileus virginianus*	Y
Caribou (southeastern populations)	*Rangifer tarandus*	B
Fish		
Bull trout	*Salvelinus confluentus*	B
Chiselmouth	*Acrocheilus alutaceus*	B
Mottled sculpin	*Cottus bairdi*	B
Shorthead sculpin	*Cottus confusus*	B
Umatilla dace	*Rhinichthys umatilla*	R
White sturgeon (Kootenay River pop.)	*Acipenser transmontanus*	R
White sturgeon (Columbia River pop.)	*Acipenser transmontanus*	R

Appendix C Seral Stage Guidelines for Rangelands in Provincial

Parks and Regional Connectivity Corridors

1. Seral stage requirements set out in the current version of the Forest Practices Code Biodiversity Guidebook to apply as the default. If Guidebook requirement change, these Guidelines would be expected to change accordingly.
2. NDT4 and other grassland areas within portions of provincial parks containing livestock grazing: 75% of the area to be at 75% of the potential natural community.
3. NDT4 and other grassland areas within portions of the regional connectivity corridors containing livestock grazing: 35% of the area at 75% of the potential natural community. (It is recognized that this target may not be achievable in the short term in low elevation portions of the Rock Creek, Kettle and Granby River drainages, due to noxious weed invasions.)

4. Fire maintained ecosystem restoration guidelines to be applied as a high priority in these areas.

Back to Table of Contents

•Top •Copyright •Disclaimer •Privacy •Government of British Columbia

• Ministry Home
• Government of British Columbia
Kootenay Region
Ministry of Sustainable Resource Management
The Minister
News
Search
Reports & Publications
Home
Contacts

Kootenay/Boundary Land Use Plan

Implementation Strategy

Kootenay Inter-Agency Management Committee

June 1997

Chapter 3: Resource Management Guidelines

3.1 Explanation of Resource Management Guidelines and Regionally Significant Resource Value Maps

A main goal that guided development of the KBLUP Implementation Strategy was to not only provide a long-range, strategic vision for land and resource management, but also to provide sufficient clarity and detail to support lower level planning and operational level resource management decision-making. To that end, a series of resource management guidelines and associated resource value maps (as detailed in this chapter) were developed for key natural resource values. The guidelines and maps work in combination to provide specific, spatially referenced resource management guidance within the context of the overall management objectives and strategies outlined in Chapter 2. The guidelines supplement other existing resource management guidelines, such as the provincial series of Forest Practices Code guidelines.

Each of the resource management guidelines describes, for a particular value, the type and level of resource management practices/standards that are recommended in order to conserve the integrity of that resource value. The resource value maps are used in tandem management guidelines to show the recommended spatial extent of guideline application. The geographic locations of the values shown on the maps indicate the areas where the resource value is considered to have provincial or regional significance, based on assessments of scarcity and uniqueness of the value. It is recognized that there are also many other areas where resource values exist that are locally significant. Resource management direction for these locally significant resource values will be determined through application of standard resource management provisions (e.g., FPC guidebooks), through lower level strategic and operational planning processes, or through application of the general, region-wide land and resource management strategies contained in Chapter 2.

The information provided in the guidelines and maps will be used to instruct and guide all subsequent land use and natural resource management planning initiatives, including landscape level planning and operational planning. The expectation is that, where resource

management guidelines overlap on the ground (e.g., where a grizzly bear guideline and an ungulate management guideline
geographic area), the requirements of all applicable guidelines should be applied, and the most constraining guideline (in terms of restrictions on resource development) should be implemented for that area. This should result in resource management practices that sustain all resource values in the area. Instructions to tenure holders that are issued by agencies responsible for oversight of FPC operational planning requirements should clearly indicate the requirement for operational plans to consider the appropriate guidelines in this plan.

The resource value maps contained in this chapter are presented at a relatively small scale and thus provide only a general indication of the recommended extent of resource management guideline application. Larger scale resource value maps (available in resource management agency regional and district offices) should be referenced if greater geographical accuracy of resource management guideline application is needed.

The guidelines and associated maps were prepared on the basis of best current information, and in conformance with the planning constraint to limit short-term timber supply reductions in recognition of community stability requirements (see Chapter 1, section 1.4). The guidelines are intended to be applied with sufficient flexibility to allow site-specific judgments and decisions which best fit individual circumstances and characteristics, within the context of the overall management objectives and strategies identified in Chapter 2. However, it is anticipated that the guidelines and maps will evolve over time. Such changes will likely result from a variety of factors, including:

- experience gained in implementation of the guidelines;
- new or better information due to ongoing inventory or research, and;
- refinement of the management direction by moving to the local or site-specific level which will identify opportunities which could not be addressed at this regional scale.

Refinements and/or interpretations of the guidelines and/or maps, which may be required to ensure effective ‘on-the-ground’ delivery, will result from an inter-agency process. The two main vehicles for this purpose are an inter-agency agreement (Memorandum o
and landscape unit objectives and plans (see Chapter 6, section 6.3). Major changes to the guidelines and/or maps must be approved by the Kootenay Inter-Agency Management Committee, in conformance with KBLUP provisions respecting Plan Amendment (see Chapter 6, section 6.8). Any interpretations or changes to the guidelines or maps will be undertaken in a manner which is consistent with the intent of the guideline and in conformance with the overall management direction provided through the regional objectives and strategies (Chapter 2).

3.2 Management for General Biodiversity

3.2.1 Introduction

(a) Guideline Intent

To provide strategic direction for the management of General Biodiversity. As per the FPC Biodiversity Guidebook, management for general biodiversity is based on the following principles and assumptions:

- The more that managed forests resemble the forests that were established from natural disturbances, the greater the probability that all native species and ecological processes will be maintained.

- The habitat needs of most forest and range organisms can be provided for by:

  - modeling and maintaining an optimum variety of patch sizes, seral stages, and forest stand attributes and structures across a variety of ecosystems and landscapes

  - maintaining connectivity of ecosystems in such a manner as to ensure the continued dispersal and movement of forest- and range-dwelling organisms across the landscape

  - providing forested areas of sufficient size to maintain forest interior habitat conditions and to prevent the formation of excessive edge habitat.

- To sustain genetic and functional diversity, a broad geographic distribution of ecosystems and species must be maintained within forest and range lands.
- To ensure that management for biodiversity is flexible and adaptive.
- To maintain in perpetuity all existing native species across their historic ranges.
- To manage for biodiversity across and within Landscape Units.
- The conservation of biodiversity depends on a coordinated strategy that includes:

  - a system of protected areas at the regional scale

- provision for a variety of habitats at the landscape scale
- management practices that provide important ecosystem attributes at the stand scale.

(b) General management approach

Mature Plus Old and Old Seral Targets

Establishing mature plus old and old seral targets is the primary purpose in landscape unit planning. Management strategies to achieve these targets must be flexible and adaptive. The objective is to plan the landscape unit so as to meet seral targets as soon as possible.Planning design should be ecologically sound while providing opportunities to harvest timber.

Several options can be considered for designing landscapes to meet conditions for mature plus old and old seral targets while manitaining opportunities for harvesting. Some of the options appear below:

1. Setting up of a problem solving forum at the regional planning level or district planning level that interprets and agrees to design landscapes that meet seral targets with negotiated approaches to achieving short term wood suppply in an ecologically sound manner.
2. Design landscapes in a matrix of patch sizes according to the guidebook which would facilitate reducing green-up and adjacency constraints and therefore free up short term wood. This is an ecologically appropriate approach and an example of how to work towards this patch size matrix objective would be to immediately reduce green-up in general forestry areas from 3 meters to 2 meters and have no adjacency rules applied for partial harvesting.Another approach may be to use the early seral targets in th

planning guide to approving cutting permits rather than using green-up standards.

3. Where mature plus old and old seral deficits exist in High and Intermediate Emphasis interim Landscape Units, design a recruitment strategy that will identify OGMA's and mature areas that will meet the seral targets in the shortest time frame and incorporates the most appropriate areas to meet connectivity ,representation,and interior conditions. The general mangement approach is not to harvest old seral stands if the landscape unit is currently below the seral target. However there may be exceptional circumstances where it makes ecological sense to harvest a small portion of old seral if other areas can be recruited in large patches.
4. Where there currently is an excess of mature plus old or old in a landscape unit the general management approach would be to plan harvesting in the youngest of the stands first.
5. Where no harvesting opportunites appear to exist other options could be persued such as:

- old growth could be reduced to 1/3rd of the target in Low Emphasis. The amount of draw down should be based on a management unit (TFL/TSA) and landscape specific circumstances and recruitment strategies should be in place to confirm that the full target can be achieved by the end of the 3rd rotation.
- Old and mature plus old attributes could be managed for instead of setting aside whole stands. If agreed to definitions for attributes is established this approach would be ecologically sound.
- Silvicultural standards could be modified to achieve old attributes in a shorter time frame when recuiting from younger stands.
- Varying age definitions for certain species profiles might be a suitable option that could be used to meet targets while achieving landscape ecosystem objectives. Discussion of such changes will be undertaken preferably within the context of a coordinated provincial process involving MoF, MELP, Industry and Environmentalists.
- Using alternative targets from the ones used in the guidebook is possibly another suitable option. Discussions of such changes will be undertaken preferably within the context of a coordinated provincial process involving MoF, MELP, Industry and Environmentalists. These type of changes would be backed up with data and scientific scrutiny.

(c) Spatial Application of Guidelines

As per the FPC Biodiversity Guidebook, the biodiversity emphasis options will be applied on the basis of landscape units. The draft landscape units and recommended biodiversity emphasis options are indicated on map 3.2. The rationale for the recommended biodiveristy emphasis options is outlined, by Forest District, in the applicable appendix (see Appendices 1-7). The allocation of the various emphasis options has been based on the following criteria:

- consistency with provincial policy, including a maximum of 10% of the land base allocated to high emphasis biodiversity, approximately 45% intermediate emphasis and approximately 45 % in low emphasis. These percentages have been distributed by forest district within the Kootenay/Boundary region
- Regional connectivity corridors as defined and interpreted in 3.3.2, under-represented ecosystems for protection of old-caribou habitat and priority grizzly bear habitat were also considered in the allocation of high and intermediate biodiv options.

3.2.2 Operational Guidelines

There is a range of three options for emphasizing biodiversity at the landscape level. Each option is designed to provide a different level of natural biodiversity and a different risk of losing elements of natural biodiversity:

- The lower biodiversity emphasis option may be appropriate for areas where other social and economic demands, such as timber supply, are the primary management objectives. This option will provide habitat for a wide range of native species, but the pattern of natural biodiversity will be significantly altered, and the risk to habitat suitability, capability and effectiveness will be high.
- The intermediate biodiversity emphasis option is a trade-off between biodiversity conservation and timber production. Compared to the lower biodiversity emphasis option, this one will provide more natural levels of biodiversity and a reduced risk of eliminating native species from the area.
- The higher biodiversity emphasis option gives a higher priority to biodiversity conservation but would have the greatest impact on timber harvest, lower risk to extirpation of species.
- Specific direction on biodiversity management practices, such as the establishment of forest ecosystem networks, wil
old growth management areas, seral stage distributions, and coarse woody debris requirements within the three biodiversity emphasis options is outlined in the FPC Biodiversity Guidebook.

3.3 Management for Regional Connectivity

3.3.1 Introduction

(a) Guideline Intent

To maintain opportunities at the regional level for genetic exchange between populations and for gradual shifts in the distribution of whole ecosystems in the face of catastrophic events. The intent is to also use the system of regional connectivity corridors to enhance management of rare habitats, red/blue listed and other regionally significant species, and ecosystems that are under-represented in the protected areas (i.e. < 12% by ecosection, bears, wolverines, etc.)

(b) General Management Approach

The above intent will be achieved by applying the following general measures:

- the viability and effectiveness of core protected areas, as has been identified through the Goal 1 process of the Protected Areas Strategy, is enhanced through support zones and regional landscape connectivity (i.e. linkage corridors) which creates a network for genetic exchange and dispersal
- the connectivity corridors to provide for the seasonal migration of a variety of species which therefore requires efforts to minimize further human-development linear barriers and rehabilitate existing barriers where appropriate.

(b) Spatial Application of Guidelines

The connectivity guidelines will be applied within the regional connectivity corridors as indicated on map 3.3. The corridors were identified through the following criteria:

- inclusion of Special Resource Management Zones that were identified for conservation reasons by the CORE planning process, and subsequently recognized in the government land use decision in March 1995, to serve as support zones for protected areas where appropriate
- representative ecosystem gap analysis of protected areas by ecosection, biogeoclimatic unit and habitat types, both within the region and in adjacent areas where appropriate (recruitment areas for old growth)
- identification of key migration and movement corridors and analysis of physical and human-development barriers to species movement
- distribution of rare ecosystems and the habitat of red/blue-listed species
- areas with minimal existing access or priority areas for restoration and access management at the landscape and stand levels.

3.3.2 Operational Guidelines

The following principles will be refined and reflected in lower level strategic planning processes. In the interim, these principles are to be used within the allocated biodiversity emphasis options (see section 3.2) to address the spirit and intent of regional connectivity during operational planning and decision-making:

- to meet habitat requirements, mixed plant species management will be promoted, with an emphasis on native species where possible
- within the allocated emphasis options, efforts should be made to concentrate retaining attributes in areas adjacent to protected areas
- within the allocated emphasis options, maintain existing old growth stand attributes through designation of old growth management areas and forest ecosystem networks within the connectivity corridors wherever possible
- promote a coordinated, planned approach to minimize linear barriers in low passes to accommodate movement
- when connectivity corridors overlap with other values requiring access management (e.g. priority grizzly bear habitat, ungulate winter range, sub-alpine/alpine grasslands, NDT4, wildland areas or mountain caribou habitat) the priority for access planning, regulation and/or rehabilitation will be within the connectivity corridors. Areas deployed as high emphasis biodiversity will also be a focus of road deactivation, in particular for the purposes of watershed restoration.
- regional connectivity corridors incorporate priority areas that require wildlife species inventory to support the establishment of wildlife habitat areas, as per the FPC Identified Wildlife Handbook.
- a private land acquisition program (see Chapter 2) will focus on critical habitats within connectivity corridors should such lands become available.

3.4 Grizzly Bear Management Guidelines

3.4.1 Introduction

(a) Guideline Intent

To provide the amount and distribution of habitat required to maintain suitable population levels and distributions of grizzly bears, except in recovery areas where populations appear to be too small or too restricted in distribution to remain viable. In such recovery a
to provide the amount and distribution of habitat needed to allow the populations to recover in size and distribution, to the point they are self-maintaining.

To minimize bear-human interaction so as to avoid human injury and/or mortality as well as the displacement of grizzly bears either through forced relocation or mortality resulting from past human conflicts, over-harvesting or poaching.

(b) General Management Approach

The above intent will be achieved by applying the following general measures:

- conserving highly productive and/or critical feeding and breeding habitats, and ensuring bear access to these habitats
- setting road densities and objectives and managing access by designated units (access management measures will be refined through landscape level planning processes)
- using timber harvesting and silvicultural methods that sustain food production
- avoiding residential and recreational development-related conflicts
- eliminating improperly managed carnivore attractants (e.g.,, uncontrolled landfills)
- using landscape-level forest ecosystem networks (FENS) and regional connectivity corridors to provide dispersal corridors between areas of population concentrations (such as parks)
- allocating biodiversity emphasis as high or intermediate (as per the FPC) in appropriate areas (see map 3.2) within the constraint of 10-45-45 by district.
- a technical committee will be established to make annual recommendations to MOF District Managers regarding implementation of these guidelines through Forest Development Plans (FDP).

These guidelines will be refined through adaptive management. Their application will be reviewed to identify potential modifications which may improve the ability to meet the objective of enhancing Grizzly Bear habitat. The guidelines are intended to be applied with sufficient flexibility to allow site specific decisions which best fit individual landscape characteristics.

(c) Spatial Application of Guidelines

These guidelines apply to the Grizzly Bear Priority habitats, identified on map 3.4, which represent areas of high grizzly bear density and priority recovery areas. For the purposes of future lower level strategic and operational planning, the grizzly areas have been classified into priority 1, 2 and 3 habitat management areas that are derived from habitat suitability indices, as per Fuhr and Demarchi (1994), and a qualitative ranking of draft landscape units within forest districts.

As per the provincial Grizzly Bear Conservation Strategy, the grizzly bear management areas will be further defined and designated into a range of management types.These management units will provide for the management of site-specific grizzly bear habitats (e.g., denning and concentrated feeding sites) while ensuring integration with the KBLUP objectives and strategies. The grizzly bear habitats will be further defined based on the KBLUP interim landscape units and estimated population densities. Further inventory and mapping at the landscape level will identify critical carnivore habitats for operational level planning and decision-making and will be used as the basis for modeling seasonal carnivore habitat values and conducting a patch and landscape analysis.

Note: Implementation of the Grizzly Bear Conservation Strategy within the context of the KBLUP Implementation Strategy will continue over this next year and will result in refinements to these grizzly bear management guidelines. These refinements will be

reflected in subsequent lower level planning (see Chapter 6, section 6.3).While the entire guidelines will be reviewed, the * symbol identifies the key aspects which are priorities for discussion. In the interim, the focus on grizzly bear management will be relative to avalanche chutes, access requirements, and site specific identification of feeding and denning sites.

In determining critical foraging, breeding or denning areas, consideration will be given to:

- The importance of the site on a landscape basis, including whether negative impacts on it could potentially limit local populations.
- Cumulative impacts (monitoring and analysis) of nearby developments and activities.
- Whether use of the site is spatially concentrated or dispersed (e.g.,, dispersed berry feeding areas versus a small riparian meadow with concentrated spring foraging for glacier lily corms).

In general, critical areas are defined as those sites which are essential to a grizzly bear's life history. The life requisite variables are food, shelter, breeding habitat, travel corridors and denning sites. The following areas are suggested:

- core population habitats
- post wildfire shrubfields
- active foraging sites
- avalanche tracks
- alpine meadows
- riparian habitats
- denning sites (active or potentially active; to be determined by inventory)
- ground squirrel colonies; ungulate calving areas
- other areas identified as critical.

These critical habitats will be identified by lower level strategic and operational levels. Buffers and/or access management should be maintained around critical habitats, except where greater environmental problems would be created by maintaining a complete reserve within the buffers (such as by re-routing roads into inappropriate locations).

3.4.2 Operational Guidelines

(a) Interim Direction

In order to more accurately apply guidelines, better information is required regarding grizzly bear densities and habitat usage. Through ongoing and future inventory and research, such information will be integrated into both lower level strategic and operational planning. In the interim, management of grizzly bears will be addressed using grizzly bear management units as defined by the Provincial Grizzly Bear Strategy (see section 3.4.1 (c)) and biodiversity emphasis option allocation as described in sections 3.2. Within the context of these biodiversity emphasis options, resource managers should, in the interim, seek to apply the intent of these guidelines through operational planning and decision-making with a priority focus on management of avalanche chutes and access requirements.

(b) Forest Harvesting Guidelines

Silvicultural systems commonly used in timber management are clearcuts, seed tree, shelterwood and single or group-tree selection. These methods can be used to enhance both grizzly food and cover and are discussed in more detail below. Specific harvesting guidelines are suggested as follows:

Clearcuts

- cutblock sizes should vary according to the patch size recommendations within the Biodiversity Guidebook and to site specific concerns that are identified at the LU and FDP level by BCE staff.
- edge can be maximized and sight distance reduced to 200m by creating an undulating cutblock boundary. If access is controlled, this guideline may be modified.

* cuts should be planned so that adjacent harvested units qualify as useable hiding cover as indicated by an analysis of landscape patterns and stochastic distributions. Harvesting schedules between sub-drainages should also be alternated to meet cover requirements at a Landscape Unit scale.

- clearcuts should be screened from roads by leaving a strip of trees (for example, 50m) to promote bear use of early vegetative stages and to minimize poaching from access roads where appropriate.
- * avoid cutting areas adjoining meadows or other natural openings or foraging areas used by Grizzly Bears, as identified by BCE district staff (see buffers to foraging areas in the forage enhancement section of this guideline).

Partial Cutting

Partial cutting is important to retain an open forest canopy for grizzly food production, maintenance of adequate early spring forage and security cover. In general, important herbs and fruit bearing shrubs are benefited by selection cuts.

* A specific recommendation for partial cutting is removal of 20 - 50% of the stands basal area, dependent on wind firmness of affected stand, where it can be accommodated as per the Forest Practice Code and biodiversity emphasis option allocation.Partial cutting may not be appropriate for shade intolerant species such as lodgepole pine when quick regeneration is needed or near clearcuts where a
travel, escape, and rest may not be available.

Age Structure

Long-term grizzly habitat management should maximize vegetation diversity, approximate natural conditions and include late successional stages. Specifically, managers should work toward maintaining a mosaic of age classes consistent with Grizzly Bear habitat
a particular Landscape Unit. Wherever possible, the distribution should conform to the Biodiversity Guidebook for High and Intermediate Emphasis by NDT.

Seral Stages

Diversity of seral stages is generally the rule when managing forested lands for wildlife. However, some seral stages are of more value as grizzly habitat components than others. Specifically:

- early successional stages are valuable in producing grizzly foods (grasses, herbs, and fruits).
- mid-successional stages and pole-size stands of timber are of less value, particularly if they are dense, single species, even-aged stands.
- over-mature (A.C. 8+) and mixed aged stands should be retained for thermal cover and denning habitat.
- uneven-aged management should be used as it reduces disturbance and produces valuable food and cover species after each stand entry.

Forage Enhancement

In areas that are designated by BC Environment as being important for bear foraging, silviculture regimes should be compatible with the maintenance or enhancement of bear food production (e.g., as huckleberry, Hedysarum, horsetail).

Site preparation methods (Interagency Grizzly Bear Committee, 1986) include:

- prescribed-fire slash removal where it will enhance food production, provided that on some areas large coarse woody debris is maintained and burn intensity is regulated. The ration of intensity will be determined at a landscape scale using a stochastic distribution process.
- promote soil disturbance that creates establishment or growth of food plants.

Restocking prescriptions should aim for stand structure and composition similar to that present in adjacent blocks. Clumped tree distribution should be favoured over evenly-spaced stems. Existing openings or gaps in the stand should be identified prior to harvesting and used as the basis for PHSPs aimed at creating and maintaining gaps and clusters in the managed stand (Hamilton, 1994a).

Vegetation management activities should be restricted to the area immediately surrounding individual trees or clusters of trees. Motor-manual brushing is the preferred method. Treatments should be designed to directly reduce competition with crop trees, so grizzly forage species that are not direct competitors with crop trees will be avoided (Hamilton, 1994a).

Foraging habitats (including high elevation shrubfields, berry patches, alpine meadows, ungulate calving areas and ground s where identified and mapped by BCE district staff, are to be avoided by managing access and buffering from planned roads Buffer recommendations for these habitats are 100m on flat ground and greater on steeper slopes.

Timing of Activity

Past and future activities must be put in perspective and harvest planning should consider long term consequences. Cumulative effects analysis procedures are useful for determining the impacts of proposed logging activities on bear populations. Specific suggestions for scheduling harvesting activities follow:

- logging should take place at a time of little or no biological importance to bears.

- if possible, logging should take place in winter to minimize soil disturbance and compaction. If winter logging is feasible, operations should take place primarily in summer.
- logging should be concentrated into the shortest time frame possible.

* logging operation should seek to concentrate the cut and associated activities, therefore providing areas of refuge for grizzly bears within other parts of the drainage. To achieve this intent, the following should be considered: operations should not take place simultaneously on adjacent areas (same or next drainage); a series of cuts at spaced periods to allow regeneration between harvest periods (i.e., 3m green up); large scale permits (>20% B.A. removal) should not be planned on adjacent watersheds (same or next drainage) within short (10-15 years) time intervals; these watersheds should be modeled to achieve optimum levels of Grizzly Bear conservation. Drainages should be alternated when accessed for resource extraction within landscape units, with one side of a watershed being utilized in order to concentrate harvesting impacts.

- timber harvest schedules should be coordinated with other land activities to reduce simultaneous impacts.
- harvesting should be scheduled to optimize vegetation responses beneficial to grizzlies.

Forest Management Adjacent to Snow Avalanche Tracks

In absence of a professional field assessment, the following provisions will apply:

- Snow avalanche tracks (i.e., slide chutes), which are recognized by BCE staff as significant carnivore habitats require Avalanche Track Management Zones (AMZs). The primary objective of AMZs is to ensure sufficient security cover is maintained adjacent to avalanche tracks frequented by carnivores.
- On slopes with a series of snow avalanche tracks alternating with strips of forest (>2 tracks/km or <500 m between tracks), there should be AMZs 50 m in width (or as available) established on both sides, and around the base of each avalanche track. On single or widely spaced avalanche tracks (<2 tracks/km or >500 m between tracks), there should be AMZs 100 m in width established on both sides, and around the base of each avalanche track.
- Forest harvesting within the AMZs should emphasize retention of cover through the application of partial cutting systems, such as single tree selection or group selection. In general, the objective should be to maintain the stand structure and species composition present in unmanaged stands on similar sites. Tree removal should be limited to approximately 20% of the pre-harvest basal area on one side of an avalanche track on single or widely spaced avalanche tracks. Areas between closely spaced avalanche tracks should be managed on long rotations with infrequent entries.
- Where possible snow avalanche tracks should be crossed at mid slope, and avoid crossings on runout zones in toe slope positions. Roads which cross avalanche tracks identified as critical carnivore habitat should provide temporary access only, and be closed when not in use.

Forest Management In Riparian Habitat

Riparian zones are heavily used by grizzlies for feeding and as travel corridors. While riparian areas can be opened up to produce bear foods such as wet site forbs and graminoids, special considerations must be taken when logging in, or near, these areas. The intent
riparian management zone for forage production, except within the riparian reserve which should be avoided for the purpos

harvesting. Specifically:

- Using FPC riparian guidelines for riparian habitats as per guidebook. In site specific stream areas ranked as significant Grizzly Bear habitats by BCE staff, consideration should be given to manage these habitats as sensitive areas.
- soil disturbance should be minimized particularly on mesic or hydric sites.
- riparian vegetation should not be altered within code designated reserves .
- low intensity broadcast burning or hand piling and spot burning are recommended as site preparation methods. High i these sites may destroy rhizomes.
- riparian areas at the base of avalanche tracks should be managed to retain connectivity to upper elevations.

(c) Access Management

In critical grizzly bear habitats active, open forest road density (i.e.,, currently accessible by motorized vehicles) are generally too high to achieve the desired management for grizzly bears. MOF District Managers must consider ways to reduce these densities. Two pilot projects have been initiated to recommend road density targets by September 1998 that will not significantly affect short term wood supply and safeguard grizzly bears from displacement or harassment.

Targets will vary, depending on regional carnivore management planning, carnivore densities and factors influencing the effect of roads on carnivores, such as the shape of valley, volume of traffic, location of roads and junctions, timing of use, and visibility.

It is recognized that new roads built for the exclusive purpose of minerals, coal or oil and gas exploration and development, or for human settlement or to access private property and Land Act tenures, are relatively few. In areas of concern within grizzly bear habitat, new mineral/energy/settlement/access to private land road construction will be subject to an enhanced referral to identify specific operating conditions. In these rare cases where road density is at or near limits, access in the short term will be closely monitored and managed (with possible gated or other closures) and target road densities may be temporarily exceeded. The permitting government agency must promptly notify the MOF District Manager of the development application. Operational planning will be initiated by government to d targeted road density can be achieved. The siting and timing of construction and use for such roads will be subject to review within the context of these guidelines.

The process and general methodology for managing access within grizzly bear habitat, including strategies to be used to achieve the target road density, are summarized in the KBLUP Access Management Guidelines, section 3.12. However, specific direction for access management within and around critical grizzly bear habitat includes:

- emphasizing a concentration of resource development and active roads to small portions of a drainage at any one time, in contrast to concurrent dispersed development activities. For example, this may be achieved by limiting forest harvesting activity at any one time to certain tributaries of a valley, to one side of a valley, the upper or lower portion of a valley, or by closing off all side roads not leading directly to the areas of activity. Under this scenario, all forest harvesting roads should be closed in the portion of the drainage that was originally active before moving into the next portion of the drainage. Where necessary, roads for other resource activities will be regulated through specific permitting conditions identified through an enhanced referral.
- avoiding roads, where possible, in high-elevation post-wildfire shrubfields, riparian habitat, seepage areas and avalanche slopes.

- identifying specific measures through resource development plans that result in effective permanent or seasonal closures, such reclaiming road designed for short-term access to cutting and/or mineral exploration areas and designing main haul roads to incorporate effective physical road closures at impassable barriers, such as river crossings.
- until the Grizzly Bear Conservation Strategy has identified Conservation, Recovery, Benchmark and Sustainable Areas and associated priorities for access management, the priority for access management planning and activities will be where priority gr
overlaps with regional connectivity corridors (see section 3.3).

(d) Attractant Management

Locations for new sanitary landfills should avoid Conservation Management Areas (as per the Grizzly Bear Conservation Strategy). Where this is not possible, there should be a waste management plan/permit which must include plans to minimize attractants for Grizzly Bears.

Existing landfills in Conservation Management Areas should be reviewed by BCE staff, and where necessary, a managemer
to minimize attraction to the area. If landfills occur in key bear habitat and there is a history of problem bears, they should be closed or modified as bear-proof.

All work camps in bear habitat should incinerate garbage at least daily, or provide bear-proof garbage containers. These req
be included in all permits for activities involving the establishment of camps. All Ministry of Forests, BC Parks and private
eliminate waste disposal containers and require users to independently store and remove their waste from the site.

(e) Range Management

Expansion of range tenures (cattle, horses or sheep) and sheep vegetation management should be avoided in Grizzly Bear habitats, unless it can be shown these activities will have no adverse impacts on bear populations.

If there is evidence of damage to critical carnivore habitat from domestic grazing in bear habitats, existing range tenures in those areas should be reviewed, and range management plans revised to eliminate the problem. In some cases it may be necessary to consider a temporary cessation of activities, or even cancellation, to resolve a bear-human or carnivore-livestock conflicts.

(f) Recreational Development

Within Grizzly Bear habitats, environmental impact assessment for new construction or expansion of resorts, backcountry cabins, trails and other recreational developments should include an evaluation of potential impacts on carnivores. Development plans may include monitoring of activities and impacts on carnivore habitat and populations to ensure that limits of acceptable change are not exceeded.

(g) Predator Control and Hunting Management

Hunting regulations for grizzly bears and prey species, including hunting access restrictions, should be coordinated with the both Provincial Grizzly Bear Strategy and the BC Environment Harvest Strategy.

(h) Inventory and Research

In order to develop better information for refining these guidelines at the lower level strategic and operational levels, licensees will be encouraged to submit proposals for FRBC funded inventory projects (minimum 3 years) using approved MOELP standards for Grizzly Bears within license areas rated as priority 1, 2 and 3 Grizzly Bear habitats by MOELP staff. Long term inventory projects enable biologists and forest managers to improve both landscape and stand level guidelines.

3.5 Ungulate Winter Range Management Guidelines

3.5.1 Introduction

(a) Guideline Intent

To ensure that viable populations of ungulate species including elk, white tailed deer, Rocky Mountain Bighorn sheep, California Bighorn sheep and moose, are maintained. To achieve that goal, these guidelines provide direction with respect to the location, preferred type, distribution and attributes of forest cover, as well as the access management, required to maintain suitable habitat conditions which support the variety and populations of ungulate species.

To minimize displacement of ungulates resulting from poaching and development activities within designated winter ranges.

Within the context of the Kootenay Boundary Land Use Plan (K.B.L.U.P.), management of ungulate species is linked to the management of predator species as healthy populations of prey species is necessary to maintain viable populations of large carnivores.

(b) General Management Approach

The above intent will be achieved by applying the following measures:

- The guidelines are intended to be applied with sufficient flexibility to facilitate management decisions which compliment desired habitat characteristics over the landscape.
- Management guidelines are intended to be applied by the Biogeoclimatic Ecosystem Classification (B.E.C.) system for all identified ungulate winter ranges throughout the Kootenay region or the managed forest ecosystem component, expressed in the "Management Guidelines For Fire Maintained Ecosystem Restoration" document.
- Management efforts to enhance the suitability and carrying capacity of all other identified ungulate winter range components in N.D.T.4, should be consistent with the operational schedules and appropriate management techniques stipulated through the fire maintained ecosystem restoration guideline direction.
- In the Cranbrook and Invermere Districts, forest cover stocking standards on the ungulate or forage leading polygons identified in the Trench Integrated Renewable Resource Management (T.I.R.R.M.) plan, should be consistent with fire maintained ecosystem restoration guideline direction. As this exercise has not been conducted in other Forest Districts within the Kootenay Region, the stocking standards specific to all ecosystem components expressed in the ecosystem restoration guidelines matrix will apply.

- Improve the identification and accuracy of all ungulate winter ranges within the Kootenay region.
- Utilize available information regarding specific winter range locations, the ranking of species in order of priority for each range and application of specific operational direction to develop appropriate management regimes. Decisions regarding species management priorities can be determined from existing biophysical information, however, this is not an entrenched rule and flexibility is open for interpretation by the appropriate resource managers.
- Manage the identified winter ranges for the optimal amount, quality and arrangement of security and snow interception cover and forage resources. These habitat management objectives will vary according to the target species, local climate and residual habitat conditions.
- Manage access development and use, consistent with the Access Management Guidelines(section 3.12), to minimize ungulate displacement, habitat degradation or loss and vulnerability to over -harvesting or poaching.
- Within identified winter ranges, ensure that management of other resources is consistent with habitat management goals for ungulates.
- Consistent with Provincial biodiversity guideline direction, the old growth sere will be maintained and distributed throughout all B.E.C. units in identified wildlife winter ranges.
- Consistent with biophysical attributes, forest habitat cover should be arranged to maintain the most suitable connectivity, interior forest conditions and edge attributes.

(c) Access Management

The primary method of meeting the guideline intent of minimizing habitat loss and the displacement of ungulates from designated winter ranges will be achieved through management of road densities and active use of roads in and around high capability winter habitats. Strategically, road densities should be managed, within the mapped winter ranges, at <3km./km. squared by 250 ha. units. If this road density target cannot be met, appropriate rationale must be provided. Road density targets will be refined in conjunction with winter range status and incorporated into both lower level strategic and operational planning and negotiation processes

It is recognized that new roads built for the exclusive purpose of minerals, coal or oil and gas exploration and development, or for human settlement to access private property or Land Act tenures, are relatively few. In areas of concern within ungulate winter range, new mineral/energy/settlement road construction will be subject to an enhanced referral to identify specific operating conditions. where road density is at or near limits, access in the short term will be closely monitored and managed (with possible gated or other closures) and densities may be temporarily exceeded. The permitting government agency must promptly notify the MOF Di
the development application. Operational planning will be initiated to determine how the targeted road density can be achieved. The siting and timing of construction and use for such roads will be subject to review within the context of these guidelines.

The process and general methodology for managing access within winter ranges, including strategies to be used to achieve the target road density, are summarized in the K.B.L.U.P. Access Management Guidelines, section 3.12. However, specific direction for access management within ungulate winter ranges includes:

- Through the existing Forest Development Planning process, a comprehensive, integrated access management plan, which addresses the complete spectrum of natural resources and resource user requirements on identified winter ranges must be developed.
- Development of permanent roads should be avoided in ungulate winter ranges.
- New roads should be permanently closed to conventional vehicular use on completion of forest harvesting, silviculture or other

resource development activities.

- Motorized use of roads situated within winter ranges, should be seasonally scheduled , wherever possible, to minimiz displacement of ungulates from preferred habitats during the winter months. This recognizes that some roads, required for human settlement purposes (including access to private resorts and private land) and industrial activities do require winter access, but will seek to meet the intent of the guideline.
- Use of existing main line forestry related road access, which traverses through winter range areas, will be maintained. However, if these roads are not required for use on a daily basis they should be subject to seasonal use scheduling.

(d) Spatial Application Of Guidelines

These management guidelines apply to the species specific polygons depicted on the K.B.L.U.P. ungulate winter range map (see map 3.5) or re-inventoried versions. The identified areas represent known, critical ungulate winter habitat. Where a particular geographic area provides habitat for more than one priority ungulate species, a "leading" ungulate species has been mapped at the 1:500,000 scale. (These maps are available for lower level strategic and operational planning). Where this occurs, the intent is to apply the operational guidelines for the leading species for that geographic area. However, if necessary, more than one guideline set can be applied on a 250 ha. management unit.

Within the areas indicated on the regional winter range map, management regimes will vary according to B.E.C. sub-zone, variant and priority species as indicated in the operational guideline table.

3.5.2 Operational Guidelines

Forest Cover

Table 1: Forest Cover Guidelines

Species	Guideline Set	Biogeoclimatic Ecosystem Classification Subzone Variants	Minimum Amount of Mature Forest Cover Retention Over the Managed Forest Land Base	Habitat Management Objective	Rationale/Comments
Elk Mule Deer	**1a** slopes <50%	PPdh1, PPdh2, IDFdm1, IDFdm2, IDFun, IDFxh1, ICHxw, MSdk (only on site series 2 & 3 on slopes >50%)	**25%** forest cover comprised of 101 + yr. old trees, with an ave. crown closure of 50% in units >10 ha. every 250 or suitable multiples up to planning cell scale.	• Maintain a relatively high component of forest cover to support foraging, security, snow interception cover and connectivity requirements. • Maintain mature forest	Slopes <50% usually retain deeper snow than slopes >50 particularly Fd, frequ structural attributes which optimize foraging, cover and movement opportunities on these sites.

				cover at the optimum distance to forage sites.	
Elk Mule deer	**1b** southern aspects >50%)	PPdh1, PPdh2, IDFdm1, IDFdm2, IDFun, IDFxh1, ICHxw, MSdk (only on site series 2 & 3 on slopes >50%)	**15%** forest cover comprised of 101 + yr. old trees, with an ave. crown closure of 50% in units >10 ha. every 250 or suitable multiples up to planning cell scale.	• Maintain thermal cover and litterfall opportunities. • Contribute to habitat diversity management objectives. • Maintain a high forage to cover differentiation.	Steeper slopes, on southern aspects, receive of solar radiatic snow and consequently can be managed to a w a lower retentio mature trees.
Elk	**1c**	MSdm1, MSdk, except site series 2 & 3, ICHdw, ICHmk1, ICHmw1,2 & 3. ICHvk1, ICHwk1, ESSFdk	**30%** forest cover comprised of 101+ yr. old trees, with an ave. crown closure of 60% in units >20 ha. every 250 or suitable multiples up to planning cell scale	Maintain a relatively high component of forest cover to support foraging, security snow interception cover and connectivity requirements.	Deep snow is o these winter range habitats. Dense stands with interlocking crowns provide the required attributes to facilitate foraging and movement opportunities
Whitetail deer	**2a** except beside avalanche tracks	PPdh1, PPdh2, IDFdm1, IDFdm2, IDFun, IDFxh1, ICHxw, MSdk (only on site series 2 & 3)	**30%** forest cover comprised of 101 + yr. old trees, with an ave. crown closure of 50% in units >20 ha. every 250 or suitable multiples up to planning cell scale **15%** forest cover for whitetail deer late winter range on slopes >50%	• Maintain suitable security, snow interception cover and connectivity habitat values. • Maintain mature forest cover at the optimum distance to forage sites. • Maintain a high forage to cover differentiation..	Retention of mature trees, particularly Fd, provide the most suitable structural attributes required to optimize the habitat management objectives for whitetail deer. See 1a and 1b for forest cover retention variation.

Species	**GuidelineSet**	**Biogeoclimatic Ecosystem Classification Subzone Variants**	**Forest Cover Retention Over the Managed Forest Land Base Minimum Amount of Mature**	**Habitat Management Objective**	**Rationale/comments**
Whitetail deer	2b	MSdm1, MSdk, except as noted in 1a & 1b, ICHdw, ICHmk1, ICHmw1,2 & 3	**40%** forest cover comprised of 101+ yr. old trees, with an ave. crown closure of 60% in units >20 ha. every 250 or suitable	• Maintain snow interception , security, thermal cover,litterfall and connectivity • Maintain mature	Deep snow is often prevalent on these winter range habitats. Dense stands with interlocking crowns provide the required attributes to facilitate foraging

			multiples up to planning cell scale	forest cover in close proximity to forage sites	
Whitetail deer Elk Moose Mule deer	3 adjacent to avalanche tracks	All B.E.C.'s	**70%** basal area retention within a 100 to 200 metre strip on either side of the track comprised of 120 year old trees with an ave. crown closure of 60%.	- Maintain mature forest cover in close proximity to forage sites. - Maintain connectivity, security cover, snow interception cover, thermal cover and litterfall	Deep snow is often prevalent on these winter range habitats. Dense stands with interlocking crowns provide the required attributes to facilitate foraging and movement opportunities.
Mule deer	**4**	MSdm1, MSdk, except as noted in 1a & 1b, ICHdw, ICHmk1, ICHmw1,2 & 3 ICHvk1, ICHwk1,ESSFdk	**35 - 55%** forest cover comprised of 101+ yr. old trees. In the Boundary F.D. , 121+ trees, with an ave. c.c. of 60%. in units >20 ha. every 250 or suitable multiples up to planning cell scale	• Maintain snow interception, security cover and litterfall • Maintain mature forest cover in close proximity to early spring forage sites. • In the Boundary F.D., snow interception is the principle management objective	Deep snow is often prevalent on these winter ranges. Dense mature Fd stands with interlocking crowns provide the required attributes to facilitate foraging and movement opportunities.
Rocky Mountain Bighorn Sheep	**5** (subalpine/ alpine grassland) 300 m. area adjacent to grassland habitat.	ICHvk1, ICHwk1,ESSFdk	**70%** basal area retention within a 300 m radius of grassland. Forest cover comprised of 121 to140+ year old trees with an ave. crown closure of 60%. Distribution units should be established within a 300 m. radius of grassland habitat.	• Maintain 100% retention of Pa parkland. • Maintain thermal cover retention adjacent to foraging habitats	Mature trees, with a high crown closure or interlocking limb component provide the structural attribute required to meet this objective.

Moose	6	PPdh1, PPdh2, IDFdm1, IDFdm2, IDFun, IDFxh1, ICHxw, MSdk (only on site series 2 & 3 on slopes >50%)	**40%** forest cover comprised of 82 to 100+ year old trees, with an ave. crown closure of 50% in units >20 ha. every 500 or suitable multiples up to planning cell scale	- Maintain snow interception, security cover, and connectivity - Maintain mature forest cover in close proximity to forage sites.	In the drier subzone usually not an issue snow is often preva moister subzones. Dense stands with interlocking crowns provide the required attributes to facilitate foraging and movement opportunities.
Moose	7	ICHvk1, ICHwk1,ESSFdk MSdm1, MSdk, except as noted in 1a & 1b, ICHdw, ICHmk1, ICHmw1,2 & 3	**50%** forest cover comprised of 121 to 140+ year old trees, with an ave. crown closure of 70% in units >20 ha. every 500 or suitable multiples up to planning cell scale	- Maintain snow interception, security cover, and connectivity - Maintain mature forest cover in close proximity to forage sites.	Deep snow is often prevalent in these subzones. Dense, mature stands with interlocking crowns provide the required attributes to facilitate foraging and movement opportunities

Definitions

Forest Cover Distribution

Spatial distribution of forest cover should be established in 250 hectare units. To facilitate planning or analysis requirements, these units can amalgamated into multiples or nested within current interim planning cells, landscape units or watersheds.

Forest Cover Location

- The most suitable locations to maintain and connect forest cover, would be along distinct topographic breaks and on ridges or knolls. Mature forest cover components located in these areas can function in the capacity of security, thermal and snow interception cover and will also facilitate secure diurnal and seasonal ungulate movement requirements.

Optimum Habitat

- Optimum habitat refers to the amount and arrangement of cover and forage area that results in the maximum possible use of a specific land base by ungulates.

1 Optimum Cover

- The optimum dimensional characteristic of a patch of cover could range from 183 meters to 366 meters.

Optimum Forage Area

- For maximum use by ungulates forage areas should have no point in excess of 183 meters from the cover edge.

Mature and Old Growth Structural Characteristics

- As opposed to younger forests, the structural attributes associated with mature or old growth forest stands often contribute to a higher habitat suitability factor on ungulate winter ranges. The principle attribute contributions include; increased forage opportunities associated with needle and lichen litterfall (Fd needles have a higher inherent nutrient value than needles from immature trees), fewer numbers of stems per hectare and a predominately wide crown radius of individual trees. The latter attribute, particularly if the crowns interlock, accommodate ease of movement and enhance foraging opportunities beneath the forest canopy through enhanced snow interception capability.

Lower age class surrogates may provide some of the preferred requirements, however, not having the same structural characteristics, that are associated with mature stands, they do not usually have the capacity to fulfill all the essential habitat elements to the same degree as mature forest cover stands.

- Mature forest cover retention

As stated in the forest cover guideline matrix, mature cover is the minimum percentage of mature forest habitat determined to be the most appropriate for a specific ungulate species by B.E.C. unit by distribution unit. The recommended forest cover percentages relate to 100% forest cover by area and apply to the managed forest component expressed in the fire maintained restoration guidelines.. The preferred species and desired characteristics are also expressed in table 2 of the guidelines.

1 Preferred Forest Cover Species

- As expressed in the guideline matrix, Douglas fir is the species on which the emphasis of retention will be focused. In relation to other species, Douglas fir has the most suitable inherent structural attributes which contribute to increased foraging opportunities, ungulate mobility high snow interception, thermal cover and security cover capability.

Forest Cover Components

1 Security cover

- Security cover is defined as vegetative habitat or topographic attributes which have the capability to enable ungulates to conceal themselves. Forest stand attributes which provide this cover characteristic should be at least 5ha. in size with a minimum stem height of 2 meters. Stem density is also an influential factor, however, the number of stems per ha. will vary in conjunction with ecosystem component designation and management objectives. On a site specific basis, cover provided by shrubs (height > 2m) may also be considered as security cover . Where required on steep slopes (>70%), greenup should exceed 3 meters in height to provide adequate security cover for ungulates.

2 Snow interception cover

- Snow interception cover is defined as tree crown attributes which have the capability to intercept snow. As this capacity will often vary in conjunction with the size, shape, stem density and species of tree, it is important to retain species which have the structural attributes which will have a distinct influence on snow interception capability. In this regard mature Douglas fir, Ponderosa pine or dense intermediate age Douglas fir are preferred. As this variable often is the limiting factor for winter survival in areas with moderate to high snow accumulation, the selection and location of species with suitable structural characteristics is extremely important.

3 Thermal cover

- Thermal cover is defined as forest habitat which has the capability to assist ungulates in maintaining a constant body temperature. Stand attributes which have the potential to provide this cover characteristic are comprised of multi-layered stands, a height class of 2+, a crown closure class of 6+, are at least 20ha. in size and have a minimum width of 400 m.

4 Connective cover

- Residual forest cover components should be interconnected through retention of corridors of mature forest (age class #5+) at least 200m. in width. This characteristic should occur in all landscape units to ensure suitable forest cover linkages are maintained within the identified winter ranges and between summer and winter use areas.

5 Special habitat protection cover

- Special habitat features such as identified mineral licks, wallows, calving grounds or exceptional foraging areas should have a designated forest management zone, which precludes permanent access, maintained around the perimeter of the site.

6 Forest harvesting

In an effort to reduce physiological stress, at a time when over wintering ungulates are at their lowest energy level, forest harvesting activity should be concluded by mid winter.

3.6 Mountain Caribou Management Guidelines

3.6.1 Introduction

(a) Guideline Intent

To provide the amount and distribution of habitat required to maintain viable populations of the several distinct herds of blue-listed mountain caribou.

To minimize displacement of mountain caribou resulting from development and recreational activities in critical habitat.

Within the context of the KBLUP, mountain caribou are being used as an umbrella species, in that the application of the guidelines, in combination with the biodiversity emphasis option allocation (see section 3.2) is intended to address the needs of old growth dependent species in those ecosystems, at least until further information about such species allows for more specific management direction to be developed.

Note: Ongoing discussions within the scientific community and within the context of the emerging Provincial Caribou Strategy will result in refinement of these guidelines. These refinements will be reflected in subsequent lower level planning (see Chapter 6, section 6.3). In the interim, the focus will be on the General Forest Management Direction (section 3.5.2) and access management and the following guidelines apply:

In caribou habitat areas;

a. Old growth retention by draft landscape unit is:

> **ESSF, a minimum of 30% of the operable landbase in age class 8 or older of which at least one third must be in age class 9, in the ICH a minimum of 40% of the operable landbase in age class 8 or older of which at least one quarter must be in age class 9.**

b. Access Management:

> **Restrict snowmobiling to areas outside late winter range habitat**
>
> **Avoid road access in the upland Parkland areas and;**

c. Remainder of the guidelines are still under development and only the ** sections of the following guidelines will apply

(b) General Management Approach

The above intent will be achieved by:

- designation of caribou habitat management areas which include a full range of seasonal habitats, including spring, calving, summer, rut, early winter and late winter, and movement areas between habitats. The management areas should be sufficient in size to maintain viable numbers of all populations within the region.
- within caribou habitat management areas, ensure that a sufficient proportion of the land base is maintained in old growth forests on a continuous basis, from tree line down to the lowest elevations used by caribou.
- maintaining continuous, broad corridors of old growth and mature forest at regular intervals to connect larger pockets of old growth forest.
- managing access to and within caribou habitat management areas to minimize disturbance and illegal harvest (access management measures will be subject to review by local level planning processes).

(c) Spatial Application of Guidelines

The mountain caribou management guidelines apply to the caribou habitat areas identified in map 3.6. These areas represent known, critical caribou habitats based on radio telemetry data, aerial census data, caribou habitat and biophysical mapping and known sitings. Within the areas shown on map 3.6, the operational guidelines respecting maintenance of forest cover vary by seasonal caribou habitat requirements.

3.6.2 Operational Guidelines

(a) Forest Management

General

- Within the ESSF, a minimum of 30% of the landbase below the 1994 operability line will be in age class 8 or older, of which at least 1/3 must be in age class 9. On an additional 20% of the landbase below the 1994 operability line partial cutting is acceptable so long as the ECA will not exceed 35% total, with greenup defined as age class 7 or greater.
- Within the ICH, a minimum of 40% of the landbase will be in age class 8 or older, of which at least 1/4 will be age class 9.
- Basal area retention above the 1994 operability line is 70%.
- Rotation ages for all habitats is 151 years.
- Cutblock sizes will vary from 0.25-100 ha depending on landscape unit planning processes and habitat type in ESSF.
- Slope classes for guideline application will be less than 80%. **
- Timber harvesting will be confined to the landbase outside upland parkland areas. **

Stand-level management objectives and silvicultural strategies for winter habitat **

Habitat management objective	Applicable season/zone1			Rationale/comments	Suggested silvicultural objectives	Silvicultural strategy
	EW-ICH	EW-ESSF	LW-ESSF			
windfirm habitat	•	•	•	• natural sporadic blowdown is a source of forage, but the stand as a whole should be windfirm	• windfirm stand	maximum approximately 30% (excluding roads and landings)
contiguous future habitat	•	•	•	• maintain habitat contiguity in space and time; minimize susceptibility to catastrophes	• basically healthy stand	• 1. careful logging including: • direction falling • placing bunches to minimize bole and

						branch damage • skidding to minimize • bole damage • 2. post-harvest sanitation cutting if necessary
maintain preharvest species composition	•	•	•	• caribou prefer B and BS forest types to S and SB	• maintain pre-harvest species composition and size class distribution	· marked to cut to retain specified mixture of species
abundant aboreal forages lichens available on standing trees	•	•	•	• adequate forage abundance is necessary to maintain use by caribou • snag retention may be necessary if a high proportion of lichen biomass is on snags • lichen abundance is low on trees with few branches or dense, tangled branches; dense branches hinder access to lichen (<50% of lower tree branches covered)	• significant component of trees Class 3, including some of Classes 4 and 52 • moderate branchiness below 4.5m • a range of diameter classes retained	• maximum volume removal approximately 30% (excluding roads and landings) • spread volume removal over appropriate classes • to retain snags use feller-buncher and grapple skidders (WCB variance is necessary)
abundant arboreal forage lichens available as litterfall	•	•		• adequate forage abundance is necessary to maintain use by caribou • lichen-bearing snags produce litterfall as the branches break and bark sloughs off	• significant component of mature, lichen-bearing trees • a component of declining trees/snags (Wildlife Tree Classes 2-4)3	• maximum volume removal approximately 30% (excluding roads and landings) • spread volume removal over appropriate classes • to retain snags use feller-buncher and grapple skidders (WCB variance is necessary)
snow interception	•	•		• fresh soft snow covers	• manage for snow	• low volume removal

				ground forage and litterfall, and makes movement difficult	interception in all or part of stand • high canopy closure • dense, wide, long crowns • multilayered structure	• group sele single tree selection • unlogged reserves may be left within stand
maintain low evergreen shrubs where they occur; avoid enhancing forage for moose and deer	•	•		• low evergreen shrubs important before snow is deep, especially in the ICH • enhancing habitat for moose and deer may increase wolf populations or attract them to caribou ranges	• minimize disturbance of soil and vegetation	• keep harvesting or site preparation activities that disturb the forest floor to an absolut winter log on snowpack, spot scarify, or plant without scarifying)
minimize visual obstructions	•	•	•	• caribou seem to prefer areas where they can see around them; there is evidence that they avoid areas where tall shrubs, conifer regeneration, or obstructions restrict visibility • this management objective applies also to stands used by caribou during snow-free seasons	• regeneration density control to lower limits of silvicultural acceptability - see silvicultural standards as per FPC.	• regeneration may be widely dispersed, as in single tree selection for uneven-ag under low or • regeneration may be concentrated into patches providing in adjacent areas
maintain stand level connectivity	•	•	•	• caribou seems to prefer areas where movement is not obstructed by debris or vegetation • this management objective applies also to stands used by caribou during snow-free seasons	• avoid excessive physical obstructions (e.g., windthrown slash, many down trees)	• thorough slashing of logging debris, especially if in large quantity.

Interim prescriptions for selection silvicultural systems in mountain caribou habitat with reference to effective pre-harvest stand structure

Effective Pre-harvest Stand Structure	Single Tree Selection System	Group Selection System
Single-storied Stand Structure Two-storied Stand Structure Multi-storied Stand Structure Irregular Stand Structure	Conversion to multi-stories stand structure requires several light stand entries. Maintain at least 75% of initial basal area per cut. Protect and maintain high-rated lichen-bearing trees. Mineral soil exposure needed to promote natural spruce regeneration. Moderate (40+ year) cutting cycle. One or more moderate stand entries to release thrifty C2 (pole-sized intermediate trees), stimulate seed production in overstory, and promote understory regeneration. Maintain about 66% of initial basal area and B-level stocking. Protect high-rated lichen-bearing trees. Protect pole-sized trees during felling and skidding. Long (75+ year) cutting cycle. Stand entries must maintain and enhance existing structure, species composition, quality, and stocking. Retention of about 66% of initial basal area is acceptable depending on the wind exposure of the stand. Maintain at least 20 m2/ha (approx.) of basal area per entry. Protect and maintain high-rated lichen trees. At least one stand entry needed, possible as an improvement cut, to promote the desire multi-storied stand structure and allow basal area stocking to increase over time to acceptable minimum levels (20 m2/ha approx.) or more. An extended cutting cycle will be necessary to allow basal area stocking to recover.	The following applies to all partial cutting using group sele habitat (exceptions are noted): • each stand entry should remove no more than 30 volume or area, including skid trails. • small opening sizes (<0.5 ha) are probably best for caribou habitat and stand windfirmness. • if protection of advance regeneration within openings is desired then winter logging on snowpack will help. • mineral soil expo planting may facilitate regeneration of desired species. • group selection must be used if snag retention using feller-buncher harvesting is a stand management objective. • long cutting cycles (75+ years) are necessary for biomass retentior • for stands with in an extended cutting cycle will be necessary if basal initially.

(b) Access Management

Road density, coupled with the volume of motorized traffic, has a negative affect on caribou. Efforts are being made to iden road density and recreational use within prime caribou areas.

It is recognized that new roads built for the exclusive purpose of minerals, coal or oil and gas exploration and development, or for human settlement to access private property or Land Act tenures, are relatively few. In areas of concern within caribou habitat, new mineral/energy/settlement road construction will be subject to an enhanced referral to identify specific operating conditions. where road density is at or near limits, access in the short term will be closely monitored and managed (with possible gated or other closures) and densities may be temporarily exceeded. The permitting government agency must promptly notify the MOF Di the development application. Operational planning will be initiated to determine how the targeted road density can be achieved. The siting and timing of construction and use for such roads will be subject to review within the context of these guidelines.

The process and general methodology for managing access within critical caribou habitat, including strategies to be used to achieve the target road density, are summarized in the KBLUP Access Management Guidelines, section 3.12. However, specific direction for access management within and around critical caribou habitat includes:

- an emphasis on zoning for recreational activity to restrict snow-mobiling to areas outside of late winter range habitat **
- avoid road access in the upland parkland areas wherever possible.**

3.7 Watershed Management

3.7.1 Introduction

(a) Guideline Intent

To provide a clear definition of "community watersheds" and "domestic watersheds". To acknowledge that community watersheds will be managed as per the Forest Practices Code Community Watershed Guidebook. To provide management guidance for forest and mineral exploration activities in domestic watersheds.

The intent of this guideline is to be consistent with provincial policy on the management for domestice watersheds. As this policy is currently just emerging, these guidelines will be reviewed at the time the policy is finalized to ensure consistency.

(b) Definitions

General

The intent of the community watershed definition is to capture watersheds which serve as important water supplies for legal groups such as municipalities, regional district areas, improvement districts, utilities and water users' communities. These user groups generally utilize water systems which are built to higher standards and service many properties.

The intent of the domestic watershed definition is to capture watersheds which support domestic licensing but where the water users have not incorporated themselves and frequently utilize individual water systems.

Community watersheds are defined in the *Forest Practices Code of British Columbia Act* as follows:

41 (8) For the purposes of subsection (6) “community watershed” means

(a) the drainage area above the downstream point of diversion on a stream for a water use that is for human consumption and that is licensed under the *Water Act* for

(i) a waterworks purpose, or

(ii) a domestic purpose if the license is held by or is subject to the control of a water users’ community incorporated under the *Water Act* if the drainage area is not more than 500 km2 and the water license was issued before June 15, 1995, or

(b) an area that is designated as a community watershed under subsection (10) to (11).

41 (9) In subsection (8) “domestic purpose” and “:waterworks purpose” have the meaning given to them in the *Water Act*.

41 (10) The regional manager of the Ministry of Forests may designate an area as a community watershed if

(a) in the opinion of the regional manager and a designated environmental official (regional water manager) it should be designated as a community watershed,

(b) the area is all or part of the drainage area above the downstream point of diversion for a water use that is for human consumption and that is licensed under the *Water Act* for domestic or a waterworks purpose, and

(c) the area is not referred to in subsection (8((a).

41 (11) With the agreement of the designated environment official, the regional manager may be written order vary or cancel an area’ as a community watershed whether the area is defined to be a community watershed under subsection 8(a) or designated to be a community watershed under subsection 8(b).

A **Domestic Watershed** is defined as the drainage area above the downstream point of diversion on a stream which is:

(a) licensed under the *Water Act* for human consumption;

(b) not classified as a community watershed under the *Forest Practices Code of British Columbia Act;*

(c) usually not more than 200 km2 in drainage area.

Note: The area above the downstream point of diversion may include a significant proportion of private land which is not within the jurisdiction of the Forest Practices Code. It should be understood that the domestic watershed guidelines apply to the Crown land portion of the watershed although privet land owners are encouraged to adopt these practices as well.

(c) General Management Approach

Community watersheds will be managed as per the Forest Practices Code Community Watershed Guidebook.

Domestic watersheds: These guidelines define a level of management for forest activities on Crown land in domestic watersheds which lies between standard Forest Practices Code and management in community watersheds. It does this by providing:

a) a classification and mapping system for domestic watersheds;

b) a basic assessment of hazard related to forest activity;

c) a set of recommended forest practices;

d) a strengthened opportunity for public input to the forest development plan;

e) a contingency plan in case of damage to water supply.

The guidelines also outline management and practices for mineral exploration activities in domestic watersheds. Large scale mining and related activities are reviewed under the Environmental Assessment Act. This process involves detailed socio-economic and environmental assessment of the project, and considerable opportunity for public consultation.

Smaller mining projects (those that do not meet the Environmental Assessment Act thresholds) are reviewed by a regional multi-agency committee. This review process offers the opportunity for public consultation.

For forest activities, the responsibility to implement the Domestic Watershed Guidelines rests with:

a) Environment and Lands, to develop and maintain the classification and mapping system and to provide advice during the forest development plan process on high risk/consequence areas on a priority basis;

b) the forest activity proponent to complete the assessment, modify the forest development plan (FDP) to address hazards, incorporate appropriate forest practices, notify water users of the opportunity for involvement, address water users concerns during the FDP process, and in general, to ensure that activities are conducted in such a manner that water quality, quantity and timing of flow will be maintained;

c) Ministry of Forests to review, recommend modifications and approve the forest development plan if it complies with the Forest Practices Code and the KBLUP objective of maintaining water quality, quantity and timing of flow in domestic watersheds;

d) water users to attend FDP presentations, review impact assessments and plans, propose constructive technical improvements to meet stated objectives, notify agencies if problems are identified so that corrective action can be taken; to construct and maintain water works that are capable of handling natural water quality and flow levels;

e) all parties during emergencies requiring contingency plan implementation.

For mineral exploration activities, the responsibility to implement the Domestic Watershed Guidelines rests with:

a) Environment and Lands, to develop and maintain the classification and mapping system and to provide advice on high risk/consequence areas on a priority basis;

b) the mineral exploration proponent to complete a satisfactory Mines Act permit application, to address hazards, incorporate appropriate exploration practices, notify water users of the proposed mineral exploration works, and in general, to ensure that activities are conducted in such a manner that water quality, quantity and timing of flow will be maintained;

c) Ministry of Employment and Investment to review, recommend modifications and approve the Mines Act permit applications if it complies with the Mineral Exploration Code and the Mines Act, and is consistent with the KBLUP objective of maintaining water quality, quantity and timing of flow in domestic watersheds;

d) water users may attend pre-approval on-site inspections if required; propose constructive technical improvements to meet stated objectives; notify agencies if problems are identified so that corrective action can be taken; to construct and maintain water works that are capable of handling natural sediment and flow levels;

e) all parties to cooperate during emergencies requiring remedial or reclamation works.

The Kootenay-Boundary region is the first area in British Columbia to implement a comprehensive forest management strategy in domestic watersheds. Soon after the implementation phase is complete, it will be necessary to begin reviewing on-the-ground applications of the guidebook to address weaknesses and strengthen overall effectiveness.

(d) Spatial Application of Guidelines

Community watersheds are identified on map 3.7 and are in listed in table form by forest district within each of the seven Appendices. As noted in Chapter 2, strategy 49.1, the list of community watersheds will be reviewed annually to determine additions or deletions.

There are more than 2750 **domestic watersheds** within the Kootenay/Boundary region. At the time of writing this document, there is insufficient information to produce a map of domestic watersheds. Through application of these guidelines, domestic watersheds will be classified and mapped.

3.7.2 Operational Guidelines

(a) Community Watersheds

The Forest Practices Code Community Watershed Guidebook will apply within all designated community watersheds.

(b) Domestic Watersheds

Classification of Watersheds

Domestic watersheds will be classified into three categories as follows:

Class 1 Watersheds

These watersheds are associated with springs and very small creeks which do not have clearly defined drainage or catchment areas. Often these small water sources are located on "face units" (populated areas between major streams). Face units may encompass many small streams and springs which support domestic licensing. Face units will often be mapped as one area because of the difficulty
micro drainage areas without on-the-ground investigation. There may also be streams within the mapped face unit which are not licensed for domestic use. It will be important for the forest/mineral proponent to identify these early in the process so that unnecessary assessments and notification of water users can be avoided.

Class 2 Watersheds

These are small watersheds having drainage areas which are; definable on existing topographic mapping and, less than 500 ha (5 km2).

Class 3 Watersheds

These are watersheds with a drainage area of 500 ha (5 km2) to 200,000 ha (200 km2). To aide in the assessment procedure in these larger watersheds, it may be necessary for MELP to delineate sub-drainages as part of the mapping exercise. Sub-drainages will be established using the methodology given in the Interior Watershed Assessment Procedure (IWAP) guidebook.

Mapping

Class 1, 2 and 3 domestic watersheds (and sub-drainages where applicable) will be mapped by Environment and Lands onto a 1:20000 base. This mapping will also show community watersheds. Since water licensing is not static, this mapping will be updated periodically and distributed to Ministry of Forests district offices. For information on the status of water licensing on streams contact the Water Management Program.

Assessment and Detailed Mapping for Forest Activities

When forest activities are proposed within known domestic watersheds, an assessment procedure will be completed by the proponent and submitted with the forest development plan (FDP). The objective of the assessment will be to ensure that the proposed forest activities do not pose an unacceptable risk to water quality, and the quantity and timing of flow at the point of intake.

As noted under the definition of a domestic watershed, the mapped watershed area often contains private land. The following procedures are to be applied to the crown land portion of the watershed. These procedures should not be used to assess the impacts of rural land development. However, private land holders are encouraged to follow these procedures and practices when logging private land.

The assessment procedure prescribed for larger watersheds is similar in part to the procedures described in the Interior Watershed Assessment Procedure (IWAP) Guidebook and an understanding of IWAP is essential to an understanding of this section.

The proponent may request relief from the requirement for an assessment by illustrating to the MOF district manager that the proposed activity creates an insignificant impact to the watershed (i.e. large watershed with a very small amount of proposed activity). The district manager will consult Water Management staff as appropriate.

Class 1 Watersheds

Areas defined as class 1 watersheds on the mapping will undergo a detailed procedure as systems described in the box below. The main objective is to maintain the integrity of recharge areas and channel.

1. Obtain the highest quality topographic map of the area that is available (this will usually be the 1:20,000 TRIM map), the largest scale air photograph pairs available, MELP map referred to in section 3.4, the MELP map of water intake locations and the MELP water license listing of the area in question.
2. Transfer the locations of the water intakes on the MELP water intake location map to a large scale topographic map (e.g.1:20,000 TRIM map).
3. Confirm intake locations (by field work if necessary) and transfer to the topographic maps. If the stream courses are mapped inaccurately, indicate the correct locations on the topographic maps. In order to find the intakes, it may be necessary to interview the water licensees. It may be necessary to go on private land and appropriate permission should be obtained for doing so. The air photographs will be useful for field checking.
4. Map the streams above the water intakes on the topographic map by walking upstream of the intake. It may be possible to quickly affirm that the TRIM map is correct. If it is not correct, use compass and chain methods or GPS units to enable transfer of actual stream locations onto the topographic maps. It should be noted that many first order streams disappear and reappear as one moves upslope and a thorough search should be made of all field evidence of seepage zones and streamflow above the first disappearance of the streams. Indicate on the map where an actual channel exists (solid line) and where you infer flow (dashed line). Indicate evidence of flowing water and seepage separately. Mapping should be done during periods of high flow (e.g. shortly after snow
pathways are most evident.
5. Use the topographic map to outline the inferred drainage area contributing to each water source.
6. Use this map to plan the location of roads and logging activity. Roads have the potential to divert water away from areas used for water supply. Harvesting activities must be planned such that the flow remains in the natural channels. Small changes in drainage patterns can affect downslope water supplies.
7. Avoid locating roads within 50m of the water intake. If the road is constructed through a seepage area, it should be co
a manner that slope seepage is maintained in its present location. Specialized road construction techniques such as a permeable road

prism or use of geotextile fabrics may be necessary in selected seepage zones to maintain the natural subsurface flow patterns.

8. When the road is surveyed in the field, crossings of each water source should be clearly ribboned with the name of the source and "domestic water supply" written on the ribbon. The locations of the crossings are to be pointed out to those doing the road construction.
9. When the road is constructed, signs are to be placed at each water supply stream crossing which name the source and "domestic water supply".
10. Road construction should be carried out in a manner which minimizes impacts to water quality.
11. The road should be designed in such a manner that road surface and ditch drainage does not directly enter a water supply stream. High quality surfacing material should be used immediately adjacent to stream crossings.
12. All personnel doing activity in the area should be informed that they are operating in a water supply area and that all their activities including personal hygiene should respect the maintenance of the downstream water supply.
13. In general roads in this class of watersheds should remain open only as long as they are required. When road use is complete they should be rehabilitated with special attention given to maintaining natural drainage patterns.

Class 2 Watersheds

Areas defined as class 2 watersheds on the mapping will undergo a detailed procedure as described in the box below. The objective is to confirm channel and intake locations and to plan upstream activities such that new sediment sources are not created.

The procedure for class 2 watersheds requires less field work because these watersheds are topographically defined. A watershed report card (see Class 3 Watersheds) is required. Since results from the report card become less dependable with smaller watersheds, the report card should not be used by itself to define hazards in watersheds under 5 km2(500 ha).

1. Obtain the highest quality topographic map of the area that is available(this will usually be the 1:20,000 TRIM map), the largest scale air photograph pairs available, the MELP watershed classification map, the MELP map of water intake locations and the MELP water license information for the streams in question.
2. Transfer the locations of the water intakes on the MELP water rights map to a large scale topographic map (e.g. 1:20,000 TRIM map).
3. Walk stream courses above water intakes. It may be possible to quickly affirm that the TRIM map is correct and further ground verification is not necessary. When mapping does not appear to be correct, use compass and chain methods or GPS units to enable transfer of stream locations onto topographic maps.
4. Use the topographic map to estimate the drainage area.
5. Overlay available terrain information to plan the location of roads and logging activity.
6. Avoid locating roads within 50 m of any water intake or on unstable terrain.
7. When the road is surveyed in the field, crossings of each water source should be clearly ribboned with the name the source and "domestic water supply" written on the ribbon. The locations of the crossings are to be pointed out to those doing the road construction.
8. When the road is constructed, signs are to be placed at each water supply stream crossing which name the source and state "domestic water supply".
9. Road construction should be carried out in a manner which minimizes impacts to water quality.

10. The road should be designed in such a manner that road surface and ditch drainage does not directly enter a water supply stream. High quality surfacing material should be used immediately adjacent to stream crossings.
11. All personnel doing activity in the area should be informed that they are operating in a water supply area and that all their activities including personal hygiene should respect the maintenance of the downstream water supply.
12. In general roads in this class of watersheds should remain open only as long as they are required. When road use is complete they should be rehabilitated with special attention given to maintaining natural drainage patterns.

Class 3 Watersheds

Areas defined as class 3 on the mapping will undergo an assessment utilizing a domestic watershed report card. This is a reconnaissance level analysis intended to identify several broad categories of risk from past or planned forest harvesting. When high hazard levels are indicated, it is expected that these will be addressed in the forest development plan.

The domestic watershed report card is comprised of several key indicators which were developed for the Interior Watershed Assessment Procedure (IWAP). Larger class 3 watersheds may have sub-drainages delineated on the mapping. The report card indicators are to be generated for each sub-drainage.

IWAP is a very new procedure and will not be fully calibrated until many applications can be ground-truthed and analyzed. For example, current applications are experiencing numerous problems with "false highs". This occurs when high hazard scores are registered on the report card but are not confirmed by field investigation. Studies are currently underway to calibrate the reconnaissance level hazard ratings with actual on-the-ground hazards. The hazard table below will change to reflect any future calibration of ratings.

Forest activity proponents are required to submit a domestic watershed report card. This report card is based on the watershed report card on page 18 of the IWAP guidebook but is limited to:

a) peak flow index (including the equivalent clearcut area [ECA] calculation)

b) road density for entire sub-basin (km/km2)

c) no. of stream crossings (no./km2)

d) no. of landslides (no./km2)

e) roads on unstable slopes (km/km2)

These 5 indicators will be calculated by the methodology described in the IWAP guidebook and should be recorded in the following format:

Form 1. Watershed report card

Impact Indicators	Sub-basin name			
a) peak flow index (also record ECA % in this space)				
b) road density for entire sub-basin (km/km2)				
c) # of stream crossings (no./km2)				
d) # landslides visible on 1:20000 photos(no./km2)				
e) roads on unstable slopes (km/km2)*				

* Class IV and V terrain where terrain mapping is available or otherwise on slopes greater than 60%.

Hazard ratings will be determined by the following Hazard Index table:

Note: Hazard index ratings for IWAP's are presently under provincial review.

Impact Indicators	Hazard rating low medium high
a) peak flow index	<0.3 0.3-0.42 >0.42
b) road density for entire sub-basin (km/km2)	<1.5 1.5-2.1 >2.1
c) no. of stream crossings (no./km2)	<0.4 0.4-0.6 >0.6
d) no. of landslides (no./km2)	<0.1 0.1-0.18 >0.18
e) roads on unstable slopes (km/km2)	<0.15 0.15-0.25 >0.25

NOTE: Hazard ratings which are derived from this table may not reflect true conditions in the watershed. Therefore it is important that hazard scores be used only as a course filter to help identify potential problem areas and/or to aide in the prioritization of watersheds for application of a full IWAP. When scores are tending to the high end of the scale, the FDP should state how the possible hazard will be addressed.

The following is an illustration of how the hazard rating might be used:

- If indicator "a)" is high - discuss further assessment (i.e. channel assessment) needs with agency specialists and or consider alternate harvest schedules or areas;
- If indicators "b)" to "e)" are high - confirm indicator with field review, discuss assessments with agency specialists, consider reducing new road development and/or a road reclamation strategy.

Assessment and Detailed Mapping for Mineral Exploration Activities

Mineral exploration and related activities create more localized impacts than do forest activities, therefore, the same general assessment/mapping procedure can be used in all three classes of domestic watershed.

The proponent may request relief from the requirement for an assessment by illustrating to the MEI District Inspector that the proposed activity creates an insignificant impact to the watershed (i.e. large watershed with a very small amount of proposed activity). The District Inspector will consult Water Management staff as appropriate.

When activities which require a Mines Act Permit (mechanized soil disturbance) are proposed within a domestic watershed, the District Inspector may require all or some of the following based on; proposed amount of disturbance, sensitivity of the area and proximity of water intakes:

1) Obtain a 1:20,000 TRIM map (or better quality map if available) of the area, the largest scale air photo pairs available, the MELP map of water intake locations and the MELP water licensing listing for the area in question. (Contact the Ministry of Employment and Investment for copies of relevant maps or information on how they may be obtained.)

2) Transfer the locations of the water intakes on the MELP water rights map to a large scale topographic map (i.e. the 1:20,000 TRIM map). Provide a description of the intakes with accompanying photographs.

3) Map the courses of the streams above the water intakes on the topographic map by walking upstream from the intake to the area of proposed activity. It may be possible to quickly affirm that the TRIM map is correct and further ground verification is not necessary. If it is not correct, use compass and chain methods or a GPS to enable transfer of true stream locations onto the topographic map. Generally, inaccuracies in TRIM stream locations, occur more on small streams that are poorly defined by contours.

4) A reconnaissance level terrain stability assessment and detailed surface soil erosion assessment and mapping may be required by the District Inspector in particularly sensitive areas.

5) Use the map with an overlay of the terrain map (if a terrain stability assessment has been required) to plan the trail building and other mining or exploration activities. All proposed works are to be noted on the map.

Riparian Management

For forest activities, riparian management in domestic watersheds will be determined by the Riparian Management Guidebook with one important exception. Streams licensed for domestic use which are classified as S5 or S6 under the guidebook, will be manag for a distance of 500m above the most upstream domestic intake. S4 management (see page 50 of the guidebook) is designed to maintain water quality, stream channel processes and stream temperatures.

This riparian management will be applied to all water sources which support domestic licensing regardless of whether they are defined as streams under the FPC.

For mineral exploration activities, riparian management provisions will follow the Mineral Exploration Code. Except for stream crossings and pump locations, works shall not occur within 5 metres of the wetted perimeter of a stream. In cases where the 5 metre buffer does afford adequate protection for water quality, the District Inspector may employ additional best management practices adjacent to the reserve. The extent of the management area and the type of practices employed will be determined by; the proposed level of disturbance, proximity to the stream and the sensitivity of the site.

Forest Practices in Domestic Watersheds

Terrain Hazards

- A person should not propose harvesting of an area in a domestic watershed if the area is subject to a high likelihood of landslides following timber harvesting.
- Reconnaissance level terrain mapping is normally required in domestic watersheds.

Roads

- A road in a domestic watershed should not be located within a 50 m radius upslope of a water intake.
- Roads should be constructed so as to minimize disruption of surface and subsurface flow pathways particularly in spring recharge areas.
- A person who constructs, modifies or deactivates a road in a domestic watershed should; (a) notify water licensees or their representatives of the start date of road construction, modification or deactivation at least 48 hours before the start of road construction, modification or deactivation if it is anticipated that sediment could reach a water intake; (b) ensure that rock containing significant amounts of sulphide minerals, and which may have potential for generation of acid, is not used for road construction or modification.

Harvest Levels

Harvest levels are determined by calculation of the equivalent clearcut area (ECA) as is necessary for the watershed report card. This is done for the watershed as a whole and for major sub-drainages within the watershed as shown on the MELP watershed mapping. The concentration of harvesting on smaller areas should also be considered.

ECA's in sub-basins

- The maximum ECA in any basin larger than 250 ha, that has not been individually considered in the report card, should not exceed 30 % of the area. If it has been considered individually, the report card will apply.

ECA's above sensitive sites

- When cutblocks are proposed on areas which drain onto class IV or V terrain (or slopes over 60% if terrain mapping not available), the ECA should be limited to 20 % of the area draining onto the sensitive site.

Range

Range management provisions within the Forest Practices Code recognize domestic water use. Range Use Plans (RUP's) are mandatory and must indicate known domestic intakes and actions taken to accommodate this resource use. The FPC requires that the RUP indicate levels of use, strategies for wetlands and riparian areas and other provisions.

Domestic water users can review RUP's and provide comment. The MOF district manager approves RUP's and can require amendments if special circumstances warrant. In addition, the district manager can require security for the performance of obligations under a RUP.

If problems or special circumstances arise with respect to range use in a domestic watershed, the initial preferred approach is for the water user to deal with the MOF district manager. In cases where it is suspected that a water supply has been contaminated, the district manager should promptly notify and consult with staff in MELP, Ministry of Health and Ministry of Agriculture, Fisheries and Food
the appropriate expertise to confirm and respond to the problem. Occasionally, an inter-agency team may be required to resolve contentious situations.

Timber Harvesting

- A person carrying out a timber harvesting operation on applicable

land within a domestic watershed should not, except to provide access to, or to maintain, a water supply intake, cut or damage a tree that is closer than 50m upslope of a water supply intake and must protect known water supply intakes and infrastructures.

Silviculture

- The use of livestock to carry out site preparation or brush control within a riparian management area, must be guided by a suitable management or animal control plan which addresses maintenance of water quality.
- The use of pesticides will be managed similarly to the Pesticide Management section of the Community Watershed Guidebook (see page 101). Under this strategy, pesticide applicants would be required to develop an Integrated Pest Management program prior to receiving a permit. IPM programs consider non-toxic alternative treatments, long term prevention of pest problems and would provide opportunities for public input in contentious areas.
- A 10m fertilizer-free zone should be maintained around any flowing stream that is observable from the air. See the Fertilizer Management section of the Community Watershed Guidebook for a description of how to ensure this zone is maintained. Fertilizer application close to streams is sometimes beneficial to water quality (e.g. hydro-seeding of road banks at stream crossings).
- Fertilizer should not be applied within 50m upslope of a water intake.
- Fertilizer should be applied during cool and moist conditions (not during the summer).

Recreation

- The construction of recreation facilities within riparian management areas should be avoided whenever possible.
- In general, activities such as motorized recreation and camping should not be encouraged in smaller domestic watersheds (< 10 km2).

Mineral Exploration Practices in Domestic Watersheds

- Avoid locating roads, drill sites, trenches or other works within 50 metres radius upslope of a water intake or on unstable ground, unless authorized by the District Inspector.
- Exploration drilling and the establishment of pump intakes in domestic water sheds should not be located within 50 metres radius upslope of a water intake.
- Roads, drill sites, trenches or other works should not interfere with any known subsurface flow paths of a drainage area that contributes to a spring.
- When a road location is surveyed in the field, the location of the crossings of each water source stream should be clea the name of the source and "domestic water supply" written on the flagging. The locations of the crossings are to be pointed out to those doing the construction.
- When the roads are constructed, signs are to be placed at each water supply stream crossing which name the stream and indicate "domestic water supply".
- Trail, drill pad, trenching and other works should be carried out in such a manner that adverse impacts on water qualit For instance, sumps shall be utilized to contain drill cuttings and mud. Drilling muds and fluid additives shall be of a -toxic and non-hazardous nature.
- Works should be designed and constructed in such a manner that surface drainage is prevented from directly entering a water supply stream. Where possible, works should be designed and constructed such that water drains away from the stream. Specialized construction practices, operating practices and materials (such as filter fabrics, high quality surfacing materials etc.) may be required to be utilized. For instance impervious drill sumps with drilling fluid recirculation may be required in select instances.
- All personnel working on the project must be informed that they are operating in a water supply area and that all activities including personal hygiene must respect the maintenance of the downstream water supply.
- In general works shall be reclaimed as soon as practicable, when they are no longer required.
- A person who constructs, modifies or reclaims a road or exploration trail in a domestic watershed should; (a) notify water licensees or their representatives of the start date of road construction, modification or reclamation at least 48 hours before the start of road construction, modification or reclamation if it is anticipated that sediment could reach a water intake; (b) ensure that rock containing significant amounts of sulphide minerals, and which may have potential for generation of acid, is not used for road construction or modification.
- The District Inspector may require drill holes that make water to be sealed with cement.
- Trenches should be located or oriented to minimize inflows of surface water.
- If trenches intercept the water table or groundwater flows, work should not continue until it can be determined that domestic water supplies will not likely be adversely affected and the District Inspector has approved a mitigative strategy.

3.7.3 Planning Framework and Public Input

For forest activities, the following chart summarizes the first stage of planning in domestic watersheds.

	Class 1	Class 2	Class 3
Watershed type	Springs and very small streams	Small streams with defined drainage area <500 ha.	Larger streams with defined drainage area >500 ha.
Objective	Maintain water quality, quantity and timing of flow.	Maintain water quality, quantity and timing of flow.	Maintain water quality, quantity and timing of flow.
Watershed characteristics	Very small streams and spring recharge areas often with indistinct catchment boundaries and channels. Drainage patterns and sensitive areas can not usually be determined from existing mapping.	Erosion prevention is the principle concern. Sediment is likely to reach intakes. Streams may be of sufficient size to cause debris flows or bedload movement. Peak flow becomes a concern in larger streams in this class.	Slope failure, sediment delivery and channel stability are the key factors in maintaining water qualit concern.
Strategy	Detailed mapping required. Forest development plan should address hazards for specific local conditions.	The domestic watershed report card may prove useful but must be accompanied by ground-truthing local conditions. Forest development plan should address hazards.	Reconnaissance level assessment required using domestic card. In larger watershed sub-drainage becomes important. Forest development plan should address hazards.
Target conditions	Avoid problem areas. Minimal disturbance of sub-surface drainage patterns and surface channels. Recommend ECA < 30%.	Avoid problem areas which could result in sediment movement. Minimize roads and stream crossings. Recommend ECA < 30%.	Distribute cut by elevation and sub-drainage to reduce peak action plans are required for problem areas. Recommend ECA < 35%
Data requirements	Recommend level B or C terrain and soils mapping. Detailed mapping of drainage patterns, drainage areas and water intake and stream locations.	Recommend level B or C terrain and soils mapping. Detailed mapping of drainage patterns and drainage areas may in required in portions of the watershed.	Recommend level D terrain and soils mapping to ensure the effective application of the domestic watershed report card.

In the second stage of planning, the forest licensee or SBFEP must incorporate the assessment information and recommendations into the forest development plan. Riparian management and other forest management practices particular to domestic watersheds must be incorporated into the various operational plans.

When the forest development plan is advertised for public review, the forest company (or the Ministry of Forests for the small business program), will make a reasonable attempt to notify the affected water licensees that:

a) the BLANK forest development plan is being offered for review (date, time, place);

b) the forest development plan proposes harvesting or roads in the BLANK domestic watershed within the next five years.

This process will ensure that water licensees are notified about the proposed activity and are aware of their opportunity to comment on the forest development plan. Public input will be facilitated by the inclusion of the watershed assessment which will give water users an indication of existing and proposed impacts to the watershed.

The responsibility for approving forest development plans which cover areas in domestic watersheds, rests solely with the MOF district manager. This is unlike the situation in community watersheds where, under the Forest Practices Code, forest development plans must be approved by both the district manager and a designated environment official. The district manager must be satisfied that the forest development plan complies with the FPC, adequately manages and conserves the forest resources and, lastly, is consistent with any higher level plan.

This guideline should be considered baseline management which can be applied to all domestic watersheds regardless of the or other management issues. Obviously, there are some domestic watersheds where the consequences of a damaged water supply are very high and others where the consequences are relatively low. In some high consequence areas, it is expected that more planning, assessment, monitoring and public involvement will be necessary to address all issues.

For a discussion of additional avenues for planning and public involvement, see section 9.4 of the KBLUP Implementation Strategy.

For mineral exploration activities, the need for public consultation will be considered on a project-by-project, site-specific basis when activity is proposed in domestic watersheds.

3.7.4 Contingency Planning for Domestic Watersheds

The contingency planning section was largely brought over from the Community Watershed Guidebook. Work will continue on this section with the goal of improving clarity and providing better definition of agency roles and responsibilities. Any changes to this section will be made in compliance with the plan ammendment procedures outlined in Chapter 6.

a) Forest Activities

This section describes the purpose, content, and the roles and responsibilities associated with the development and execution of a contingency plan for a domestic watershed.

Elements of a contingency plan

A contingency plan will help provide for the supply of emergency water and for the rehabilitation of the water system should damage occur. The contingency plan is based on the principle of *immediate response* to water supply problems. Aspects of a contingency plan for a domestic watershed are as follows:

- A contingency plan should be adopted for domestic watersheds with input from water users, forest companies, MOF and MELP.
- The contingency plan will normally apply only to forest activities on Crown lands within the domestic watershed. Water users can expand the focus to broader issues (e.g. private land or other resource uses) by establishing agreements with other parties.

- The contingency plan should identify:
- a list of participants which will usually be comprised of water users, forest company, MOF, MELP and sometimes MOH;
- names, addresses and phone numbers of the initial contacts to ensure proper action (Figure 3.1 "Emergency response flow chart");
- procedures for the provision of alternative water supplies for the water users serviced by the domestic watershed. These can include, for example, the use of water tankers, wells, or pipelines from adjacent drainages;
- in some cases, a description of procedures to mitigate some potential water supply impacts (e.g., the construction of s
  laying of bypass pipe, and construction of a filter system to clarify water).

Figure 3.7.1 **Emergency response flow chart**

General roles and responsibilities

Whenever there is an event which adversely impacts the quality or quantity of water within a watershed by disrupting or damaging a water supply or by posing a health risk, every effort shall be made to re-establish the supply, or mitigate harmful effects, as quickly as possible. In some situations this may require that the participants undertake the necessary remedial action using any available resources before responsibility is determined.

The roles and responsibilities of the participants may vary between plans. The remainder of this section summarizes typical roles and responsibilities.

Water licensees

The roles and responsibilities of the water licensees are to:

- **Be responsible for the installation and maintenance of systems consistent with their licensing, and capable of handling the natural ranges of water quantity and quality from the source, including sediment loads.**
- **Participate in field inspections and reviews of road construction, logging operations and other resource developments and advise the government ministries and resource licensees of their concerns.**
- **In cooperation with the appropriate agencies and other resource licensees, restore a disrupted water supply as quickly as possible to minimize the impacts on the water users.**
- **Assist other resource users in the rehabilitation of the water resource and water systems where there is an impairment of water quality or quantity due to resource development.**

Ministry of Health

The roles and responsibilities of the Ministry of Health are to:

- **Upon request, assist with the emergency investigation and response in the event of impairment or disruption of water quality or quantity.**

Ministry of Environment, Lands and Parks (Water Management Division)

In most contingency plans, the Water Management Division will be the lead participant from the Ministry of Environment, Lands and Parks. In addition, the Environmental Protection Program, Fish and Wildlife Branch and the Conservation Offi
be requested to participate depending on the circumstances.

The roles and responsibilities of the Water Management Division are to:

- Upon request, assist with the emergency investigation and response in the event of impairment or disruption of water quality or quantity.
- In cooperation with appropriate provincial ministries, adjudicate disagreements over responsibilities and determine what remedial actions are required and by whom, as legislated under the *Water Act* and other applicable legislation.

Ministry of Forests

The roles and responsibilities of the Ministry of Forests are to:

- Direct Ministry of Forests tenure holders to rectify situations arising from activities authorized by the ministry which have the potential to impair or degrade water quality or quantity.
- Through the district manager, initiate repair of damage to a water supply if a Ministry of Forest tenure has expired.
- Upon request, assist with the emergency investigation and response in the event of impairment or disruption of water quality or quantity.
- In cooperation with appropriate provincial ministries, adjudicate disagreements over responsibilities and determine what remedial actions are required and by whom, as legislated under the *Ministry of Forests Act*, *Forest Act*, *Range Act*, and other applicable legislation.
- Assume the role and responsibilities of a forest licensees, as set out in this section under "Resource licensees and tenure holders", when the Ministry of Forests carries out operations under the Small Business Forest Enterprise Program.

Ministry of the Solicitor General (Provincial Emergency Program)

The Provincial Emergency Program (PEP) helps local governments and provincial ministries prepare for, and respond to, disasters which threaten life and property.

PEP may:

- Assist in providing emergency potable water in the event of an emergency which causes damage to or loss of a water supply which is beyond a water purveyor's or a licensee's ability to resolve.
- Act as a facilitator in resolving an human or environmental emergency.
- Provide emergency financial assistance to others for the purposes of repairing a damaged water supply through the Disaster Financial Assistance Program.

Forest licensees and tenure holders and their contractors

The roles and responsibilities of forest licensees and their contractors are to:

- **Advise affected water licensees of planned interruptions or potential sediment increases as a result of their activities.**
- **Immediately advise the water licensees, Water Management, and the Ministry of Forests of any situation for which they are responsible, or which they observe, which is potentially harmful to water quality or quantity.**
- **Immediately take remedial action to correct any situation arising from their activities which may potentially impact water quality and quantity, or otherwise damage a water supply system.**
- **Cooperate with the water purveyor or licensees, and the appropriate agencies, to restore a disrupted water supply as quickly as possible, thereby minimizing the impacts on the water users.**

Determination of responsibility

The objective of the contingency plan is to have all water supply problems resolved as quickly as possible and, where necessary, to determine responsibility following rehabilitative work. Where damage to a water supply occurs:

- **Refer to the contingency plan flow chart to identify the sequence of events in solving an unplanned impairment to water supplies.**
- **If a contractor or forest licensee is on site, the contractor or licensee and a representative of the water users should endeavor to determine the nature of the problem and the responsibility for the impairment, and agree upon a procedure to correct it. This should be done within 12 hours of impairment being reported.**
- **The regional water management office and the Ministry of Forests district office shall be notified immediately of any impairment which cannot be corrected within 12 hours.**
- **Where the forest licensee and the representative of the water users cannot agree on the type and extent of, and responsibility for, remedial action, they shall immediately notify either the Water Management Division or Ministry of Fores involvement of an Emergency Response Team.**
- **An Emergency Response Team will be comprised of staff from the Water Management Division of the Ministr Environment, Lands and Parks, the Ministry of Forests, a representative of the water users and, where approp resource licensee/contractor. Involvement of the Provincial Emergency Program may also be requested depen circumstances. Outside experts may be called upon at the request of the team.**
- **The Emergency Response Team will be responsible for determining the source and cause of damage to the wat preparing recommendations regarding the type of remedial action required and responsibility for its completi be done within 4 days of identification of the problem.**
- **The Emergency Response Team will submit a report on its findings to the regional water manager, Ministry of Lands and Parks, and the district manager, Ministry of Forests, with recommendation regarding the assignme responsibilities. The final decision regarding responsibility and the recovery of costs will rest with the two man**

The contingency plan is intended to expedite local solutions to water-related problems, but does not preclude a private person or corporation from pursuing individual legal remedies for damage to water quality or quantity.

Specific responsibilities

Short-term planned disruptions

Occasionally, the water users and the licensee/contractor agree to allow a short-term planned disruption of a water supply. The licensee/contractor will:

- **give a minimum of one weeks' notice to the water users to allow planning for the water supply disruption.**
- **be responsible for costs incurred by water licensees to change the water system. These can include costs to:**
- **access and utilize a temporary water supply;**
- **clean the infiltration gallery or intake dam where appropriate;**
- **deliver water to households for minimum domestic requirements.**

If a disturbance to a water supply system lasts longer than 48 hours, it is considered a long-term problem (see section 3.5.3 "Long-term disruptions").

Short-term accidental disruptions

If a short-term accidental disruption occurs, the licensee/contractor will:

- **Provide assistance to the water licensees to alter their intake system to prevent further disruptions.**
- **Be responsible for costs incurred to:**
- **access and utilize a temporary water supply;**
- **clean the infiltration gallery or intake dam where appropriate;**
- **deliver water to households for minimum domestic requirements.**

Long-term disruptions

If an accidental or planned disruption or pollution problem lasting longer than 48 hours occurs:

- **The contractor will continue to be responsible for extra costs incurred by the water licensee until such time as the problem has been rectified.**

Ensuring compliance

To ensure compliance with contract conditions and specific responsibilities, under section 3.5 "Specific responsibilities", major forest licensees or permittees are required to post with the district manager, Ministry of Forests, bonds, security deposits or safe keeping agreements for working within the domestic watershed area in the amount of $25,000, or provide documentation of an adequate liability insurance policy.

During operations, and until the district manager is satisfied that all conditions outlined in the relevant tenure documents have been met, the forest licensee should accept the responsibilities associated with operating within a domestic watershed.

Also, it is recognized that, despite all precautions, natural or human-induced damage may occur. If the relevant tenure has expired, the district manager may initiate reparation work. The Ministry of Forests will pursue sources of budgetary funding to conduct repairs required after the term of the forest tenure has expired and after the "free-growing" period has ended.

b) Mineral Exploration Activities

There are no provisions for routine contingency plans due to the relatively low level of impact to land and water resources of mineral exploration. However, the need for a contingency plan will be determined on a project-by-project, site-specific basis.

The District Inspector will set the requisite reclamation security, based on appraisal of amount required to rehabilitate site to standards dictated by the *Mines Act and Mineral Exploration Code*.

3.8 Front Country Visual Management Guidelines

3.8.1 Introduction

(a) Intent

Design of timber harvesting, forest management and mineral exploration should reflect the importance of front country landscapes to communities, recreation and tourism.

(b) General Approach

This guideline outlines three classes of landscape management for scenic areas. The classes reflect level of sensitivity and significance of landscapes to communities and to tourism.

(c) Spatial Application of Guidelines

These guidelines will apply to the three classes of visual areas identified on map 3.8.

Class 1 includes areas visible from the following highways, towns, and lakes:

- The Trans-Canada corridor (Highway 1) including Revelstoke and Golden
- Highway 93, north of Canal Flats, including Fairmont, Invermere, Radium, Windermere Lake and Columbia Lake
- Highway 3A Castlegar to Creston, Highway 31 Balfour to Meadow Creek, Highway 31A Kaslo to New Denver, including Nelson, Balfour, Riondel, Kootenay Lake and the West Arm of Kootenay Lake

- Highway 3 Corridor, including Greenwood, Grand Forks, Castlegar, Salmo, Creston, Cranbrook and Fort Steele, Christina Lake and Moyie Lake
- Highway 95A Ta Ta Creek to Cranbrook, Highway 93/95 Ta Ta Creek to Fort Steele, including Kimberley
- Highway 3B Nancy Green Lake Trail, including Rossland
- Lower Arrow Lake from Syringa Creek to Castlegar
- Highway 6 Nakusp to South Slocan, including New Denver, Silverton, the Slocan Valley, Summit Lake and Slocan Lake

Class 2 includes areas visible from the following towns, highways and lakes:

- Highway 95, Golden to Radium
- Highway 93/95, Canal Flats to Ta Ta Creek
- Highway 93 south of Elko and Lake Koocanusa
- Highway 6, Nelson to Nelway
- Highway 3B Meadows to Trail, Highway 22 Rossland to Patterson, Highway 22A Montrose to Waneta
- Trout Lake
- Highway 23 Revelstoke to Nakusp, Highway 6 Nakusp to Monashee Pass, Upper Arrow Lake, Lower Arrow Lake north of Octopus and Worthington Creeks, and Lower Arrow Lake between Renata and Syringa Creek Park.

Class 3 includes areas visible from the following towns, highways and lakes:

- Highway 43, Elkford to Sparwood
- Highway 31, Galena Bay to Meadow Creek
- Lower Arrow Lake, Fauquier to Syringa Creek
- Highway 33

3.8.2 Operational Guidelines

For the purposes of the following table, *Foreground* refers to landscape up to one kilometer away, *Midground* refers to landscape between one and five kilometers away, and *Background* refers to landscapes between five and twelve kilometers away.

	Class 1	Class 2	Class 3
Landscape Design Intent	In most visible foreground areas and in important or prominent midground areas, disturbance may be discernible but should not be evident in the landscape. In less important or prominent foreground areas, most midground areas, and important or prominent background	In most foreground areas, disturbance may be visible, but should remain subordinate in the landscape. In less important of prominent foreground areas, and in midground areas, disturbance may	In most foreground areas, dis be subordinate in the landscape. In less important or prominent foreground areas, and in midground and background areas, landscape alterations may be visually apparent, but should be designed to blend into the landscape in form and colour

	areas, visible disturbance should remain subordinate in the landscape. In most background areas and less important midground areas, landscape alterations may be visually apparent, but should be designed to blend into the landscape in form and colour.	be visible, but should remain subordinate in the landscape. In background areas, landscape alterations may be visually apparent, but should be designed to blend into the landscape in form and colour.	

3.9 Backcountry Recreation Management Guidelines

3.9.1 Introduction

(a) Guideline Intent

To manage Crown land to provide a range of recreation features, facilities and opportunities.

(b) General Management Approach

The above intent will be achieved primarily by maintaining a recreation inventory and, through lower level strategic planning which is consistent with the KBLUP and Implementation Strategy, to establish recreation objectives at the landscape unit level.

The inventory, establishment of recreation objectives and these guidelines utilize the Recreation Opportunity System (ROS) methodology. The ROS system is used to establish targets for recreation. This classification system states the type of recreation experience a recreation user (commercial or non commercial) would have using the terms; Primitive (P), Semi Primitive Non Motorized (SPNM), Semi Primitive Motorized (SPM) and Roaded Resource Land (RRL). The criteria used for the classification are; remoteness, size, evidence of humans, social setting, setting characterization and experience characterization. The following table explains the criteria and classific system. Within the context of the KBLUP Implementation Strategy, P is reserved for Protected Areas, and not applied to land outside of a Protected Area.

The management intent of SPNM areas is to maintain the unroaded character of the area and to provide opportunities for dispersed non-motorized recreation. These areas are generally remote, alpine, subalpine and high elevation forest, high elevation ridges and mountain tops that not been accessed by roads. Trails provide access for recreation users and BCFS permittees (e.g., livestock permittees). Landscape alterations have been minimal. These areas provide an opportunity to experience a reasonable degree of isolation from the sights and sounds of motorized activity in a natural appearing setting. However, in the winter, these areas may be used by snowmobiles and snowcats (subject to lower level strategic planning, local agreements and not in conflict with sensitive wildlife species), which gives a seasonal separation between activities. Helicopter use may occur in any season.

The management intent of SPM areas is for dispersed motorized recreation. These areas are accessed by primitive roads or trails suitable for high clearance 4 wheel drive vehicles, ATV's (quads), motorcycles and snowmobiles. All forms of dispersed recreation assc kinds of vehicles occur. These lands have been impacted by human activities and may or may not be natural appearing landscapes. Opportunities to get away from other recreation users and to experience solitude are good during most seasons of the year. This classification may be applied for winter use in alpine and subalpine areas used by snowmobiles and snowcats and is also intended for areas where roads have been deactivated, gated or have access restrictions.

The management intent of RRL areas is for dispersed and facility oriented recreation. These lands are accessed by better tha and are suitable for most conventional 2 wheel drive vehicles. All forms of dispersed and organized recreation associated with vehicles occurs. These lands have been altered by man and the alterations are visible on the landscape. Depending on season and the nature of the recreation activity opportunities to experience solitude are rare. (This is the classification used for the operable forest that will be harvested using roads. Non motorized activities also occur in this area such as cross country skiing or canoeing and restrictions may o some conflicting recreation activities).

For the special management and integrated polygons, it was assumed that all operable ground for forest management activities would be roaded. This means that operable forest land presently in an unroaded state (SPNM/P) would be converted to a roaded or semi primitive roaded condition over time. There is also the possibility that inoperable forest land outside of parks may be roaded at some point in the future for subsurface resource development. This was the basis for stating objectives as RRL or SPM. In most cases the land classified as RRL is the operable forest below the alpine/subalpine and the land classified as SPNM is either inoperable (steep, rocky, canyons, etc.), subalpine forest or alpine in nature.

In some of the special management areas, the operable forested land is classified as SPM (semi primitive motorized). In these cases, it is assumed that the areas will be developed for forest extraction purposes, but the roads will be temporarily or permanently de-activated, evidence of road construction and man's activity will still be evident and there may (or may not be) vehicle access by way o ATV's, mountain bicycles or 4 wheel drive vehicles.

(c) Spatial Application of Guidelines

The guidelines are applicable to recreation facilities and features throughout the region. As decisions must be made at the site specific level, and the recreation features facilities are wide spread and difficult to map at the regional scale, these guidelines will apply, in general, to the following types of areas:

- managed trails for non motorized, cross country and motorized uses
- forest roads
- trails recognized under the Heritage Conservation Act
- backcountry river corridors
- BC Forest Service campsites, cabins and historic sites
- backcountry lodges, commercial cabins and camps
- areas tenured under by BC Lands for commercial backcountry recreation
- unroaded lakes
- cave/karst areas

3.9.2 Operational Guidelines

Table 1.2 Management Guidelines for Backcountry Recreation

	Definition	General design intent	Visual design	Access management
Hiking trails, **Multi-use trails**	Trails managed by BCFS with objectives for motorized or non-motorized activities	Resource exploration and development activities should be designed to minimize disruption to trail corridors. Where substantial disruption is unavoidable, licensees should be directed to re-establish trails. Ideally, new and relocated trails should be designed to avoid future logging activity and mineral exploration		Road crossings of trails should be kept to a minimum.
Cross-country ski trails	Trails managed by BCFS with objectives for cross-country skiing. May include trails managed for other recreational uses in summer.	Where resource exploration or development is proposed on, or adjacent to an area suitable for cross-country skiing, roads and skid trails should be designed for subsequent use as ski trails. For example, design road right-of-ways to be as narrow as possible (<8 m) and have variable grades and suitable alignment to provide cross country ski trails.		
Heritage Trails	Trails designated under the *Heritage Conservation Act* [Dewdney, Howse, Athabasca trails]	Resource exploration and development should avoid trail corridors where possible. Harvesting is allowed within the right-of-way as specified in the Heritage Trail Management Plan.	Any logging within 200m of the trail should be designed such that modification may be discernibly but not clearly evident from the trail. Any logging visible from the trail, but more than 200m distant should show evidence of good visual design.	Considerable effort should be taken to minimize road crossings. Where crossings are necessary, trail locations should be permanently identified.
Backcountry	Named Rivers in RMZ	Backcountry river corridors should be	Any logging within	Where practical, no new,

River Corridors	objectives.	managed for limited access and non-motorized recreation. River corridors should be managed to achieve an ROS setting of semi-primitive non-motorized.	200m of the river should be designed such that modification may be discernibly but not clearly evident from the trail. Any logging visible from the river, but more than 200m distant should show evidence of good visual design.	permanent roads should be constructed within 500m of backcountry river corridors. Where practical, existing roads within 500m of backcountry river corridors should be decommissioned.
Campsites, cabins, historic sites	Forest Service campsites, named historic sites	Resource exploration and development should minimize potential impacts to the immediate surroundings of the site.	Any logging within 200m of the site should be designed such that modification may be discernibly but not clearly evident from the site.	
Lodges, Commercial cabins **Camps**	Permanent or semi-permanent camps or structures associated with commercial tourism tenures, without highway access.	Resource exploration and development should minimize potential impacts to the immediate surroundings of the site.	Any logging within 200m of the site should be designed such that modification may be discernibly but not clearly evident from the site.	Tenure-holders should be consulted to determine particular needs regarding access management.
Tenured or Licensed use areas	Areas tenured for commercial recreation under the *Lands Act*	Resource exploration and development activities will be evident in tenured use area. Where possible, this activity should be designed to compliment or minimize conflict with commercial recreation activity.	Resource exploration and development in tenured use areas should show evidence of good visual design. Tenure-holders should be consulted to determine areas requiring particular design consideration.	Tenure-holders should be consulted to determine particular needs regarding access management.
Backcountry lakes	Lakes, 2 ha or larger, with no road or highway access within 500m.	Backcountry lakes should be managed to maintain an unroaded condition (ROS Semi-Primitive Non Motorized).	Any logging within 200m of the lake should be designed such that modification may be discernibly but not clearly evident from the lake.	Where practical, no new, permanent constructe backcountry lakes. Where practical, existing

				roads within 1 km of backcountry lakes should be decommissioned.
Cave / karst features	Areas with significant cave or karst features	Resource exploration and development activity should be designed to minimize disruptions to hydrology and terrain that would adversely affect the karst feature. Slash should not be deposited in openings and sinkholes. Significant cave openings should be protected with a 30m reserve.		

3.10 Management Guidelines for Fire Maintained Ecosystem Restoration

3.10.1 Introduction

(a) Intent of Guidelines

To improve the productivity and health of fire-maintained forests and rangelands by restoring stand structure and species composition, through modern methods of timber harvesting, thinning, and prescribed burning. Restoration will improve forest stand vigor, reduce the risk of catastrophic wildfires, and rejuvenate bunchgrass communities.

(b) Fire Maintained Ecosystems and Origin of Ingrowth

The dry, low-elevation open forest and grassland stands of British Columbia's southern interior are defined by the Forest Practices Code Biodiversity Guidebook as Natural Disturbance Type 4 (NDT4), characterized by "frequent, stand-maintaining fires." These stands include the Biogeoclimatic Zones Interior Douglas-fir (IDF), Ponderosa Pine (PP), and dry variants of the Interior Cedar-Hemlock (ICH). Low-intensity surface fires, occurring on a 5 to 20 year cycle, are part of the natural function of these ecosystems, maintaining a mosaic of grassland and open forest, while at the same time promoting the development of fire-tolerant overstories of mature ponderosa pine, Douglas-fir and Western larch. Several decades of active fire suppression in the NDT4 has resulted in tree establishment in previously treeless openings (encroachment) and excessive tree recruitment in open forests (ingrowth) beyond the level these sites can support.
species responsible for both processes is Douglas-fir. The consequences of ingrowth and encroachment are poor forest health, poor timber quality and degraded rangeland values.

(c) General Management Approach

Restoration and management activities will be incorporated into appropriate Landscape Unit and operational plans, and will generally consist of:

1. inventories that designate areas based on a spectrum of ecosystem components each with an appropriate mix of timber and rangeland values;
2. development of harvesting and management objectives for these areas, including ranges of locally appropriate stem density, canopy closure and age-class distribution, as well as Potential and Desired Plant Communities for the rangeland understory;
3. identification and removal of any administrative obstacles to the implementation of these management objectives, and;
4. prompt implementation of Restoration work, using an adaptive management approach to fine-tune objectives and improve performance

Sample Restoration guidelines are shown on Tables 1 and 2. It is important to note that these are preliminary guidelines, intended to be modified through operational experience, the development of local inventories, and a better understanding of fire-maintained ecosystems.

Table 1. Kootenay/Boundary Fire-Maintained Ecosystem Restoration Components and Targets (based on 340,000 ha NDT4)

Ecosystem Component	Intended Characteristics	% of Maximum Timber Benefits	% of Maximum Forage Benefits	Current (1992) Distribution of Crown NDT4 Ha %	Initial Target Ha % (range)	Final Target Ha % (range)
Shrublands	Normally occurring areas of , non-productive forest, wetlands and brush	0	100	18,000 5%	18,000 5%	18,000 5%
Open Range*	Lands dominated by open grass/forb/shrub communities and managed primarily by manipulation of natural processes	10 (0-20)	90 (80-100)	34,000 10%**	51,000*** 15% (12-18%)	78,000*** 23% (20-26%)
Open Forest*	Lands with significant rangeland and significant timber values	50 (40-60)	50 (40-60)	288,000 85%**	131,000 39% (34-44%)	31% (26-36%)

Managed Forest* **(includes christmas tree permits)**	Lands providing rangeland values for 1-2 decades during the regeneration phase of timber management. During the balance of rotation, areas will be expected to provide ungulate security/snow interception cover	90 (80-100)	10 (0-20)	mostly overstocked	140,000 41% (36-46%)	41% (36-46%)

- Retention Forest and Old Growth Management Areas (as defined in Biodiversity Guidebook); distributed across these ecosystem components.
- * Old growth status currently 26% > 100 years, 1% > 250 years
- **Old growth status: initial/final targets: 17% >100 years, 13% >250 years (low emphasis); 34%>100 years, 13%>250 years (intermediate emphasis)

Given the breadth and importance of the Restoration initiative, a multi-agency oversight body, such as the Interagency Management Committee (IAMC) should take overall responsibility for its implementation and conduct periodic reviews. Dedicated resources will be required at the Forest District level, for planning and implementation of Restoration work. The involvement of non-governn resources is essential to the implementation of Restoration.

(d) Spatial Application of Guidelines

The Crown forest portion of the Rocky Mountain Trench, from the Montana border to Golden, contains approximately 250,000 hectares of land deemed to be fire-maintained. This land falls within the Cranbrook and Invermere Forest Districts. In the Boundary District, the lower parts of the Kettle and Granby river valleys from Grand Forks to Rock Creek contain roughly 90,000 hectares of Crown NDT4. Lesser amounts occur in the Arrow Forest District, along the east side of Lower Arrow Lake and the north side of the Pend d'Oreille River. In Kootenay Lake Forest District, NDT4 lands are found along the south end of Kootenay Lake,(1) and the Lower Goat River. Cumulatively, the Kootenay-Boundary Region contains a total of roughly 340,000 hectares of fire-maintained ecosystems, identified on map 3.10. The dry phases of certain other Biogeoclimatic variants in NDT3 and NDT5 may also be considered to be fire-maintained.

3.10.2 Operational Guidelines for Fire-Maintained Ecosystem Restoration

(a) Ecosystem Components

Four ecosystem components of the NDT4 are recognized for the purpose of these Guidelines: Shrublands, Open Range, Open Forest and Managed Forest(2). Each component has a unique mix of resource values. summarized in Table 1. The Table also shows current ecosystem component distribution, as well as initial and final targets. Targets are tentative and will be refined over the next eighteen months as a result of research, operational realities and social objectives. The Cranbrook and Invermere Districts are currently prepared to implement Restoration. The Arrow, Boundary and Kootenay Lake Districts will require additional inventory and planning concurrent with or prior to Restoration.

(b) Planning and Inventory

Each of the five participating Districts will include Fire-Maintained Ecosystem Restoration and management objectives as a component of Landscape Unit and lower level plans that include Crown NDT4 lands. Restoration planning must recognize the unique, multi-resource nature of the NDT4, where wildlife (both hunting and viewing), ranching, timber, environmental, christmas tree, recreationa
protection interests coincide. Existing sources of Restoration planning information include Biogeoclimatic data, Forest cover maps, paired historical/modern photograph comparisons, and average weighted crown closure maps. The Invermere Encroachment Strategy should be consulted for that District, as should the Problem Forest Types Analysis for the Cranbrook District. The Trench Integrated Renewable Resource Management Plan ("The Trench Plan"), although no longer a current plan, does include a priorization of ingrowth treatment areas in the two Districts.

(c) Restoration Operations

Restoration prescriptions will vary from site to site, but will generally target the removal of excess immature and off-site understory trees. Table 2 proposes guidelines, to be refined as site-specific data becomes available, for each landscape component. Restoratio
attempt to create a complex, ecologically appropriate mosaic of habitats across the landscape, emphasizing rangeland values on poor soils and south/southwest-facing slopes, forest values on the richer sites and north-facing slopes, and a mix of the two on the balance of the landscape. Clustering of crop trees in the moistest microsites will allow for more open canopy conditions between clusters.
Open Range and Open Forest ecosystem types will emphasize retention of the oldest or largest trees. The bulk of Ecosystem
occur within these two ecosystem components; the Managed Forest component largely defaults to current timber harvesting practices.

In the Open Range and Open Forest ecosystem components, a harvesting pass can meet target stocking initially, but unless further measures are undertaken, targets will be exceeded again after a short time. Subsequent prescribed burns will normally be required, to reduce numbers of new tree seedlings, rejuvenate the forage and browse understory, and recycle nutrients. Alternative treatments, such as mechanical thinning or spacing, may be used as a partial replacement for fire effects. All treatments subsequent to meeting modified stocking standards would be considered incremental, and would not be considered a Licensee responsibility unless by mutual agreement. Special and non-governmental funds can potentially be accessed to finance these incremental treatments.

If burning is prescribed, it should normally follow a harvesting pass that reduces initial fuel loading and laddering. Harvest slash volumes and distribution should be managed to facilitate subsequent low-temperature, ground-oriented burns. Measures must be taken to ensure post-burn survival of appropriate numbers of tree recruits. Once stands have had an initial Restoration treatment, they should bec
of a long-term, landscape-level cycle of harvesting, thinning and prescribed burning entries that optimize resource flow and ecosystem health.

The following wildlife related issues will be acknowledged in arranging Restoration operations across the landscape: wildlife trees, movement and connectivity corridors, security and snow interception cover, and the need for occasional large, connected blocks of open range/open forest. In the absence of Landscape Unit Plan objectives, planning for individual entries (harvest or restoration) should examine the surrounding 250-2500 ha area to ensure connectivity and interaction with old growth, ungulate winter range and recreati
achieved. Good opportunities exist for merging Restoration objectives with Red- and Blue- listed species management objectives, including reintroductions. The proposed sharptail grouse reintroduction in the extreme southern part of the Trench is a good example.

Table 2. Kootenay-Boundary Fire Maintained Ecosystem (NDT4) Management Guidelines

Ecosystem Component	Primary BGC Variant/Site Series Targetted	General Management System Proposed*	Connectivity Requirement	Target Stocking Standards (Stems/Ha) **	Minimum Stocking Standard (Stems/ha)	Maximum Stocking Standard (Stems/ha)	Free-Growing Window	Crown Closure Threshold Triggering Re-entry	Responsibility for italicized***)
Shrublands	Various IDFdm2/6 IDFxh1/9 PPdh1/6 PPdh2/4	Inventory and periodic burns	none	n/a	n/a	n/a	n/a	n/a	*Ministry of Forests (MOF)* (BCE) User Groups Funding Agencies
Open Range	PPdh1/2,3 PPdh2/2a,2b IDFdm1/2 IDFdm2/2 IDFxh1/2 IDFun (s. facing slopes)	Periodic harvesting, prescribed burning and/or thinning to maintain open range condition, enhancing existing or potential bunchgrass sites.	Maintain connectivity of rangelands	20 of the largest 1/3 of existing diameter range	0	75	2-5 yr	10% max	*MOF, Range* BCE, MOAFF, Forest licensees (Where harvesting occurs), Range Tenure holders, User Groups, Funding Agencies
Open Forest	PPdh1/1,4,5 PPdh2/1,3 IDFdm1/3,4,1	Periodic entries of burning, thinning and partial cutting	Provide connectivity between adjacent Open Range	250 (50 of the largest 1/3 of existing	76 (30 of the largest 1/3 of existing	400	2-5 yr	40% max.	*MOF* BCE, MOAFF, Forest licensees

	IDFdm2/3,1 IDFxh1/3,1,4,5 IDFun (subxeric to mesic)	to maintain open forest conditions and rangeland values	areas. Provide ungulate travel corridors between winter range and winter forest cover.	diameter range plus 200 well-spaced)	diameter range plus 46 well-spaced)				(where harvesting occurs), User Groups, Funding Agencies
Managed Forest	IDFdm1/1,4,5,6,7 IDFdm2/1,4,5,6,7 IDFxh1/6,7,8 IDFun (seepage sites)	Rotational harvest entries using clear-cut or light-overstory shelterwood. Manage for timber, ungulate winter range and approximately two decades of interim rangeland values per rotation.	Maintain connectivity of retention forest and OGMA's through managed forest and open forest ecosystems. Provide winter forest cover for ungulates	1000	400-700	5000	12-20 yr	80% max.	*MOF* BCE Funding Agencies

- These management systems would not generally apply to retention forest and old growth management areas.
- * Stems/ha=/> 0.5m as per Establishment to Free Growing Guidebook.
- ** Lead Agency responsible for strategic planning and approvals; operations conducted cooperatively by all listed groups, subject to funding and resources.

Restoration is not expected to conflict with Visual Quality Guidelines, since treatments will emulate natural landscapes, or with Ungulate Winter Range Guidelines, which will primarily apply in the Managed Forest Ecosystem Component. In instances where conflicts arise between these Guidelines and either the Ungulate Winter Range Guidelines or Visual Quality Guidelines, resolution will be attempted at the local planning level. Where resolution is not possible, these Guidelines will take precedence.

(d) Rate of Restoration Treatments and Socioeconomic Considerations

Treatment should start at a "break-even" level that offsets the current rate of ingrowth. Over a five-year period, treatment wi implementation, stay at that level for 20 years, and then ramp down over five years so that, after a thirty-year period, implementation targets are met (see Table 3 for an example). Applying this strategy regionally will eliminate sudden changes in employment and wood supply levels, and allow for local variation to meet socioeconomic needs.

Table 3. Restoration Schedule, Using Combined Projections from the Cranbrook and Invermere Forest Districts as an Example

TREATMENT	BASE CAPABILITY (assumes no increased resources) HA/YR	ENHANCED CAPABILITY TO STABILIZE INGRESS AND TREA (assumes increased resources) HA/YR
BURN	1000	2000
SPACE	700	1000
PARTIAL CUT	700	4000
CLEAR CUT	200	1000
CHIPPING	0	800
TOTAL	2600	8800

(e) Research and Monitoring

Work should be promptly undertaken to 1) confirm initial/final target proportions of Shrubland, Open Range, Open Forest and Managed Forest or to provide a rational basis for altering those proportions; 2) review appropriateness of Biogeoclimatic site series/variants; 3) finalize Stocking Standards for the four ecosystem components, and 4), develop canopy closure and age-class distribution criteria for each ecosystem component, based on monitoring and operational experience. These four elements of the Guidelines are interim; finalization is a priority, and should be completed within the first 18 months of operation. Other work should be undertaken to more precisely define timber and forage benefits/disbenefits at varying levels of stem density or cover. Relevant research, as well as operational experience, should be subsequently reviewed on a regular basis to ensure that these Guidelines are meeting their stated objectives, and to facilitate the adaptive management process.

3.10.3 Administration

(a) Changes Required to Facilitate Guidelines

Modified, ecologically appropriate Stocking Standards should be set for the Open Range and Open Forest components of the NDT4, in line with target stocking rates in Table 2. This modification is viewed as crucial to the efficient long-term management of NDT4 stands. It is recognized that Operational Planning Regulation requirements for block size and adjacency are superseded by these Guidelines, applied consistent with Biodiversity Guidebook recommendations for NDT4 patch size and rangeland seral stage. Modifications to current cruising standards should also be considered for these dry, low site-index areas, to bring cruising costs more in line with timber yields, and to adjust sampling intensity to capture differences in very low stocking rates. With current methodology, differences between stocking rates (between Open Range and Open Forest, for example) are undetectable. Government may also consider modified stumpage appraisal allowances or other fiscal incentives to encourage restoration harvesting in low site-index NDT4 sites and to accommodate treatments that incorporate rangeland as well as timber objectives. Some form of Annual Allowable Cut partitioning, directing a percentage of the cut to the problem forest types within the NDT4, should be considered. An equitable distribution of opportunities between the major forest companies and small business should be struck. Ministry of Forests silvicultural record-keeping systems need to be reviewed to ensure that unique NDT4 stocking standards and prescriptions can be accommodated. Special and non-governmental funds should be sought where shortfalls in Restoration-related research, inventory, planning or operations occur.

3.11 Guidelines for Timber Management in Timber Enhanced Resource Development Zones

3.11.1 Introduction

(a) Guideline Intent

To increase volumes of merchantable timber, to streamline the permitting process and provide associated employment benefits, while maintaining basic environmental quality.

(b) General Management Approach

The above intent will be achieved by applying the following operational guidelines within the KBLUP's Timber Enhanced Resource Development Zone (ERDZ-T) land use designation. The guidelines reflect an emphasis on promoting timber supply through application of intensive silvicultural practices, including timber harvesting on appropriate sites within the zone. Environmental stewardship on these lands will be maintained through application of FPC requirements.

Although intensive forest management will also be practiced on other lands in the region (i.e., within the Integrated Resource Management Zone (IRMZ), and potentially in selected pockets within the Special Resource Management Zone (SRMZ), the ERDZ -T reflects a relatively high concentration of sites suitable for intensive forest management practices, given the average to above average timber productivity and the absence of regionally significant environmental, recreational and tourism values on these lands. Accordingly, these lands reflect the best opportunity, based on biophysical attributes, to focus intensive silvicultural activities, including harvesting, in the long run.

(c) Spatial Application of Guidelines

The operational guidelines below, generally apply to the operable land base within the KBLUP's ERDZ-T designation (see Map 3.11). The following areas have been excluded entirely for :

- community watersheds

- domestic watersheds
- high and most intermediate biodiversity emphasis areas (as per the FPC Guidebook)
- most regional connectivity corridor
- caribou 1 and 2 polygons
- Coal ERDZ areas

The intent is to exclude key areas of the following from ERDZs, however more work is required to identify areas and negotiate appropriate boundaries:

- regionally significant visual values
- requirements for red listed and other blue listed species
- high value fish
- key winter ranges
- settlement lands
- ALR land

When appropriate areas can be identified, it is expected EDRZ-T guidelines, while meeting CODE standards, will take precedence over other guidelines.

3.11.2 Operational Guidelines

On appropriate sites within the operable area of the ERDZ-T, emphasis will be given to increasing timber supply through the intensive application of silvicultural regimes (i.e. various combinations of harvesting, site preparation, artificial regeneration, spacing, pruning, fertilization, commercial thinning). In particular the following practices will be promoted, within the requirements of the FPC.

(a) Reforestation

- Accelerated backlog (incremental) reforestation, including site preparation, planting and brushing, will be applied to harvested areas.
- Maximizing efforts to reduce regeneration delay (with exception of winter ranges).
- Larger, genetically improved stock will be planted to reduce the green-up period, achieve full site occupancy, and increase long-term yields.
- Density control to be applied rigorously at the free to grow stage.

(b) Fertilization

- Multiple fertilizations per rotation may be applied to suitable sites to reduce time to green-up and to increase long-term yields.

(c) Pre-commercial / Commercial Thinning

- Multiple, pre-commercial and commercial thinnings will be undertaken where economically feasible and biologically appropriate, to recoup mortality losses, improve timber quality and increase short-term timber supply.

(d) Species Management

- Optimal species selection and single species management will be applied where ecologically suited to the area.
- Effective vegetation management practices will be applied, possibly including herbicides to control competing vegeta growth of crop species.

(e) Utilization

- Enhanced utilization standards may apply (within the bounds of long-term sustainable timber productivity and basic biodiversity requirements).

(f) Rate of Cut

- Rate of cut will be guided by the results of standard watershed assessments
- Harvest ages and rotations will be determined primarily by maximizing timber volume.

(g) Biodiversity Management

- ERDZ-T areas will be managed predominantly at a low emphasis biodiversity level. Forest interior conditions will be no more than 10% of the required old seral area. The remaining 90% may be partially harvested (up to 30% of the volume in this remaining 90% may be removed in the first entry).
- Within patches, the green-up requirement between cutblocks will be based on successful silviculture planting, based on silviculture surveys, while between patches, green-up will be similar to the Integrated Resource Management Zone. See Table 1 below for preferred patch size distribution for each natural disturbance type (NDT).
- Wildlife tree patches will be implemented as per the FPC Biodiversity guidebook.

(h) Protection

- Intensive forest health surveys and effective pest management techniques will be applied to protect timber values and silvicultural investments, in accordance with FPC requirements, while minimizing impacts on significant non-timber resource values.

(i) Timber Harvesting Land Base

- Within the ERDZ-T, emphasis will be placed on increasing the timber harvesting land base through:

  - development and application of new and innovative harvesting technologies

- increasing the utilization of stands that have been excluded (problem forest types, deciduous stands)

- minimizing site degradation.

Table 1

Distribution of Patch Sizes for Each NDT

	Patch Size (ha)	**Per Cent Forest Area Within Landscape Unit Within ERDZs**
NDT1	<40	30
	80	30
	250	40
NDT2	<40	30
	80	30
	250	40
NDT3 (for BEC subzones within Douglas-fir throughout stands in NDT3)	<40	20
	80	30
	250	50
NDT3 (for BEC subzones with Douglas-fir restricted or absent in NDT3)	<40	10
	250	10
	1000	80
NDT4	<40	30
	80	40
	250	30

3.12 Access Management Guidelines

3.12.1 Introduction

(a) Guideline Intent

To provide the necessary strategic direction on access management required to balance and integrate the range of resource u

Highways, Forest Service Roads and Operational Roads serve the public, the forest industry, small business, tourism, mining, the petroleum industry and other interests by providing access to Crown land. However, roads can pose a challenge for managing and maintaining environmental and social values. Therefore, access management must promote an integrated, flexible approach for managing the landbase and all values through the maintenance of a network of highways and forest roads, to provide access for all uses, while giving careful consideration for the siting of new roads and the regulation/deactivation/rehabilitation of existing roads in order to meet the objectives and strategies.

While it is recognized that access issues are best dealt with at a more local or operational scale, these guidelines are intended to provide both strategic direction on access management to guide lower level planning and also interim direction until such lower level planning can be completed. Specific access management objectives that are to be addressed through operational level plans, such as Forest Development Plans and the regular permitting processes administered by various government agencies, are identified through the:

- Connectivity Guidelines, section 3.3;
- Grizzly Bear Guidelines, section 3.4;
- Ungulate Winter Range Guidelines, section 3.5;
- Mountain Caribou Guidelines, section 3.6;
- Recreation Guidelines, section 3.9;
- Regional objectives and strategies, Chapter 2, particularly with respect to alpine/sub-alpine areas, and;
- Resource Management Zone objectives and strategies, Appendices 1 through 7.

(b) General Management Approach

The above intent will be achieved by applying the following general measures:

- Licensed and government authorized resource users have access, including road access, to all Crown Land outside of Protected Areas for the purpose of potential resource development. The timing, location and duration of road and other forms of access will recognize and be consistent with the KBLUP management objectives and strategies, the Forest Practices Code and all other relevant government policy and legislation, to ensure sensitive values are adequately managed.
- Existing roads will be used wherever possible and the amount of new road construction will be kept to the minimum necessary for balancing and integrating access and management for all values.
- Owners of private land, holders of crown tenures or utility companies will have their access needs evaluated in all areas outside of protected areas. The goal is to seek accommodation for such access needs, including potential road access, with location and management options subject to the range of KBLUP objectives and strategies.
- Access management will be flexible and therefore able to accommodate changing technology and societal values.

- Access management will be used to maintain a range of recreational opportunities on Crown Land.
- Access restrictions, including road closures, deactivation and rehabilitation, will involve public, industry and stakeholder consultation, except when closures or restrictions are related to public safety issues. In the rare cases where roads do not meet FPC standards and must urgently be deactivated, affected government agencies will be consulted and tenure holders notified.

(c) Spatial Application of Guidelines

As was noted in section 3.12.1, specific access management objectives are outlined in various KBLUP guidelines, most of which include accompanying maps identifying the areas within the region that such guidelines are to be applied.

As well, areas of potential concern for further access development have been identified through the Resource Management Zone objectives and strategies. Such areas are deemed to involve sensitive values which require careful consideration in order to meet the KBLUP management objectives and strategies. The intention is to maintain and revise a list of areas of potential concern and identify such areas in the annual report (see Chapter 9).

3.12.2 Operational Guidelines

(a) Access management strategies

In order to achieve the intent of integrating and balancing access requirements, the management of all values must be flexible at the site specific level. The following "tool box" for access management includes strategies which may be used independently, or in combination, in a particular area to achieve the desired access objectives:

- seasonal road and activity restrictions through:

- gated road closures/area closures/legislated closures to be administered through the Forest Practices Code

- signage
- scheduling of development, construction, deactivation (including the seasonal use of heavy equipment to minimize noise disturbance);

- type and location of road development;
- discourage the construction of loop roads and parallel roads;
- longevity of all types of roads, including requirements for deactivation/rehabilitation prior to approval of new road permits;
- industrial access only;
- two pass timber harvesting system with accompanying road deactivation/rehabilitation requirements;
- non conventional timber harvesting and silvicultural systems;
- emphasize low impact forms of access in currently unroaded areas during the early stages of mineral exploration. In some circumstances, low impact access may equate to a road;
- zoning of recreation uses (commercial/non commercial as well as motorized/non motorized) to provide a range of recreation opportunities and to support the management of sensitive environmental values;

- in areas zoned for recreation uses, the management/movement of problem bears or other wide ranging carnivores may, in exceptional circumstances, be required to maintain access for recreation uses;
- hunting and fishing regulations to redistribute the seasonal access pressures, and;
- improve management of utility corridors by managing and regulating motorized use seasonally and as necessary.

(b) Application of Strategies

Regular permitting and operational decision-making processes

The application of specific strategies to areas of concern will be undertaken with an integrated and planned inter-agency foc
with the general management approach outlined above. In general, the decisions on such issues will be dealt with through the regular permitting processes, including the required referrals.

The Forest Practices Code requires new road permits to address maintenance, deactivation and rehabilitation, where practical, prior to approval. This can be done through the Forest Development Planning process or, alternatively, through access management plans.

Enhanced referral process

An enhanced inter-agency referral process will be utilized for proposed new access development in areas of concern (see 3.12.1 (c)) or other areas which, through the regular permitting process, are identified as requiring additional consideration. Enhanced referrals encompasses a broader range of referees and an expectation of more stringent approval conditions.

In an access-related enhanced referral, the legislated decision-making government agency will notify an inter-agency technical review team. Membership on the technical team will consist of government staff who have in-depth knowledge of the KBLUP management objectives and strategies and who represent all agencies responsible for their development. The technical team member who represents the decision-making government agency will coordinate the process by where the team works with the legislated decision-maker to defir
the process.

The enhanced referral process may include:

- additional information requirements by the proponent;
- identification of additional stakeholders to be notified through the newspaper or consulted directly and the means to receive their comments and advice;
- a joint field assessment by all affected agencies;
- a presentation by the proponent to the inter-agency review team;
- identification of the area as a priority for completion of a landscape unit plan. In exceptional circumstances, if the landscape unit planning process is deemed to be unable to address the situation within an adequate timeframe, a more immediate fori
the landscape level will be recommended.

The proponent will be notified by the decision-making agency as soon as possible that the proposal is in a sensitive area and requires an enhanced referral. The inter-agency technical team will commit to working with that agency to ensure an efficient process. The decision-maker will document the rationale for decision and make it available to all interested stakeholders.

3.13 Guidelines for Providing Crown Land for Settlement Uses

3.13.1 Introduction

(a) Guideline Intent

To recognize that, where appropriate, Crown Land will continue to be utilized for settlement uses; to provide information on which portions of the landbase might be considered for settlement uses; and to describe the process that will be followed in considering settlement allocations.

For the purposes of this guideline, settlement is defined as the use of Crown land for residential, recreational, community and industrial purposes. Community uses include local parks. Commercial includes land for 'front country' tourism resorts. Industrial includes sand, gravel, soil and rip-rap quarries.

This guideline is not intended to address other settlement-type activities, including the use of Crown land for roads, utilities or communications sites as these occur in all areas of the landbase outside of protected areas. These kinds of uses are authorized by lease or license and the land base continue to be held in the name of the Province. Land used for agriculture and back-country tourism and recreation are addressed through other aspects of the KBLUP Implementation Strategy (e.g., Chapter 2 and other relevant guidelines in Chapter 3). It is recognized that commerical ski resorts are a unique land use that includes both residential, recreational, commercial and community settlement at the base, and skiing terrain on adjacent Crown land that is managed for resort use and compatible resource values.

(a) General Management Approach

Identification of specific lands that will be allocated for settlement uses cannot be achieved at the regional scale of resolution. therefore, the intent will be achieved by following the existing BC Lands policy and procedures and integrating settlement uses with other values. The objectives, strategies, guidelines and accompanying maps in this KBLUP Implementation Strategy will be utilized to ensure integration of settlement land use decisions with other values. The Growth Management Strategies (Chapter 2, Appendix A) provides additional guidance for planning and delivering settlement opportunities.

It should be noted that settlement will access only relatively small portions of the Crown land base, and only portions of the settlement corridor, that is identified on the Settlement Land Map (map 3.13), will be utilized for settlement purposes. Sales of Crown land for settlement purposes are normally in the range of 200-500 hectares. This suggests that, assuming stable settlement patterns, less than .6% of the region will be allocated for settlement purposes over the next 100 years. However, it is recognized that most settlement occurs in the low elevation valleys within the region. As a result, human settlement overlaps with critical low elevation wildlife habitats, regional connectivity corridors, high productivity forests, etc. The information provided within the KBLUP Implementation Strategy will assist the process of integrating settlement with other land uses.

Private land is, from time to time, acquired by the Province, for habitat, park purposes or is returned because of tax reversions. As well, some settlement uses are temporary and the land is returned to resource use once the interim use is complete.

(a) Spatial Application of the Guidelines

This guideline can apply to any portion of the region. However, to provide understanding where settlement opportunities likely exist, provide assistance to resource managers and provide direction to lower level planning, a Settlement Land Map (see map 3.13) has been prepared. The map identifies areas likely to be considered for settlement purposes.

There are two types of settlement areas:

Community areas includes those lands within existing municipal boundaries and regional districts as well as areas that have been identified through an Official Community Plan. (This area is differentiated from the settlement corridors on 1:500,000 maps that are available for resource managers as required for further planning and decision-making. The scale of maps included in this KBLUP Implementation Strategy makes these areas too small to usefully depict.) Within the community areas there is a relatively high percentage of private land. Most of the regional population resides in or near these locations and the limited Crown land in these areas often has a high value for a variety of settlement uses. Community plans provide direction about the kind of land uses that are expected. The community areas exclude large blocks of land (greater than 250 hectares) that have been identified through Official Community Plans as being for natural resource values only.

These lands often also contain significant value for a variety of provincially managed resources. While resource management will continue on Crown lands within the community areas, it is recognized that some of these lands will, in time, be converted into settlement uses. Long term commitment to resource activities should recognize the potential for human settlement and take appropriate measures to integrate resource use activities.

Settlement corridors are areas between existing community areas. While the majority of the regions 150,000 population is located in the community areas, the settlement corridors identify lands adjacent to transportation routes where there is already extensive private lands or where specific settlement opportunities are known. Crown lands within the settlement corridors are often important to support adjacent communities for a range of activities, including landfills or quarries, that do not fit into the more intensely utilized community areas.

The amount of Crown land within the settlement corridors varies from 25-75%. This is a significantly higher percentage than that in the community areas. As a result, resource management for a range of ongoing and long term commitments occurs within these areas. Consultation with the appropriate provincial and municipal government agencies is appropriate with respect to long term resource commitments.

3.13.1 Operational Guidelines

The Province is under no obligation to accept or approve any application for settlement use. Programs and procedures change on an ongoing basis to reflect enhanced management and government policy.

Land applications will continue to be received from eligible applicants for community, commercial and industrial settlemen
the land base, although the majority will be located within one of the two types of settlement areas.

Proactive identification of opportunities to provide residential, recreational, commercial and industrial lands in conjunction with communities and stakeholders will continue. While the entire land base may be considered for settlement purposes, most pr
the community areas, with some in the settlement corridors. Efforts will also be made to avoid or accommodate the requirements for regionally significant biodiversity connectivity corridors (see section 3.2) and wildlife habitats. Allocations of Crown lands for settlement purposes will also consider official community plans and rural land use bylaws.

Planning initiatives may further identify specific Crown lands that should be considered for allocation and add or remove lands to the settlement areas.

(a) Consultation

In carrying out assessment of applications or of government-initiated proposals for settlement uses, there is a commitment to consultation with all interested government agencies. In addition, new uses that are proposed for the Crown land are advertised so the general public has an opportunity to provide input.

(b) Decision-making

In making land use decision, the Province relies on the feedback received from agencies and stakeholders and the following principles:

1. identifying the most suitable use for a parcel of land
2. minimizing conflicts and incompatibility
3. using land efficiently and effectively
4. contributing to the provincial economy
5. supporting community development, public works and institutional uses
6. maintaining a high quality environment
7. protecting important physical and biological features
8. allocating Crown lands responsibly
9. recognizing and respecting First Nations interests
10. conserving and managing aquatic lands
11. cooperating with other government agencies
12. allocating and using Crown lands fairly
13. administering Crown lands fairly
14. retaining options for future land use
15. maintaining consistency with Growth Management Strategies
16. consideration of regional district and municipal official community plans and regional district rural land use bylaws.

Decisions rely on the information received from referrals to achieve the above principles. The data available in the KBLUP Implementation

Strategy will enhance decision-making.

3.14 Subsurface Resources Guideline

3.14.1 Introduction

(a) Guideline Intent

To describe the management of subsurface resources and recognize the need for flexibility in all resource management guidelines, based on the unique nature of subsurface resources. Exploration for these hidden resources requires access to as much land as possible. However, advanced exploration and development activities occur over a relatively small area. Therefore, the KBLUP confirms the acceptability of access for, and activities related to, subsurface resource exploration and development on all Crown lands outside of protected areas. These activities will respect known sensitive values, and honour the intents of other KBLUP resource management guidelines, through specific permitting conditions. A flexible approach by all resource managers will be required to achieve KBLUP objectives.

For the purposes of this guideline, subsurface resources are defined as bedrock and placer minerals, coal, oil, natural gas, coalbed methane and geothermal resources. The definition does not include groundwater resources. Also, for the purposes of this Guideline, references to permitting processes are intended to be generic and cover all application review and approval processes for subsurface resources.

Large-scale development proposals, including mines, processing facilities and pipelines, are reviewed through the Environmental Assessment (EA) Process. The EA Process will evaluate the degree of compatibility of a development proposal with the specific KBLUP management objectives and guidelines relevant to the vicinity of the development. The KBLUP confirms that such development proposals are an acceptable land use on all Crown Lands outside of protected areas.

(b) General Management Approach

Through the KBLUP decision, government committed to provide certainty of access to subsurface resources for exploration and development activities. As noted earlier, the hidden nature of subsurface resources poses particular challenges to managing other resources relative to subsurface resources. Mineral deposits, for example, cannot be moved, consequently exploration or development be transferred to other sites. This constraint requires that the management of all other resources and activities at these sites must be sufficiently flexible to accommodate subsurface resource activities.

Permit applications will be reviewed to ensure consistency with the direction provided through the KBLUP and the Implementation Strategy, and will be implemented through existing regulations. For minerals, the new and emerging Mineral Exploration C to be a key mechanism for implementation of such decisions. For energy resources, the normal tenure review process and activity referral processes will be utilized. Using these various procedures to ensure a streamlined and efficient permitting system delivers another key commitment in government's KBLUP decision.

In the early stages of exploration, activities cover a very extensive land base and usually involve minimal impacts to other resources.

Advanced exploration and development activities may result in impacts to other resource values. However, such impacts ar a small land base, often over a relatively short period of time. In such circumstances, all resource users and managers equally share the responsibility of accommodating the work. Permits for this work will address mitigation of the short-term impacts, to the degree that is possible, and ensure long-term reclamation.

The KBLUP value maps and guidelines are available to explorationists to identify site-specific management concerns in ad work and submitting permit applications. The permitting and approval processes for subsurface resource activities administered by the Ministry of Employment and Investment (MEI) will also identify these concerns through well-established inter-agency referral processes. MEI decision makers will consider the sensitive values and associated guidelines, and apply appropriate approval/permit conditions.

MEI will provide up-to-date subsurface resource information to other agencies during landscape level planning and in response to routine referrals for land use proposals (for example, Commercial Back-country Recreation applications). This information will be provided to ensure that subsequent land-use decisions do not unduly restrict subsurface resource activities, and maintain consistency with the KBLUP.

(c) Spatial Application of the Guidelines

This guideline applies to all Crown land outside of Protected Areas.

In **Integrated Resource Management Zones** (IRMZs) the permit application review processes described in the Operational Guidelines (section 5.14.2) will be utilized.

In **Special Resource Management Zones** (SRMZs), sensitive values tend to be more concentrated and/or there is likely to be overlapping sensitive values which will require consideration in preparing and assessing a permit application. Consequently, specific permit conditions are anticipated to specify how respect for sensitive values will be achieved. In SRMZs, access for exploration activities will conform with the KBLUP Access Management Guidelines (see section 5.12) and may involve the use of enhanced referrals and permitting conditions. Small no-staking reserves (for minerals) will be considered for sensitive sites. These will be identified through lower level planning processes and will involve full industry consultation.

In the **Coal Enhanced Resource Development Zones** (ERDZ-Coal) the priority management emphasis is on the coal resources and their exploration, development and production. Within these four zones (C-E01 to C-E04), it is anticipated that there will be inter and related activities. It is recognized that ecosystem function may be temporarily compromised by coal exploration, develo production or use activities on these lands. However, long term maintenance of environmental quality of all areas impacted through innovative reclamation and mitigation technologies as determined through the permitting processes.

Energy and mineral (non-coal) resource objectives and strategies in ERDZs-Coal are identical with those in IRMZs and access to these resources is in no way diminished by the enhanced coal management objectives. Furthermore, access opportunities to coal occurrences in IRMZs (e.g. the known Sage Creek Deposit in C-I04) and SRMZs are not limited by their exclusion from the ERDZ-Coal designation.

In the **Timber Enhanced Resource Development Zones** (ERDZs-Timber) subsurface resources will be managed in a manner identical to that in IRMZs. Efforts will be made to ensure integration and compatibility of such resource development activities is achieved.

3.14.2 Operational Guidelines

All applications for exploration and development projects will be dealt with in a timely and efficient manner. The objective of the various permitting processes is to determine appropriate permit conditions under which the project will be carried out. All relevant information in the KBLUP and Implementation Strategy will be used in the permitting review process.

Various statutory multi-agency review procedures apply to subsurface resource projects which seek to identify and mitigate impacts and ensure reclamation of disturbed sites. In the case of mineral and coal projects, these include Mines Act Permit Applications, the Notice of Work referral process or the Kootenay Mine Development Review Committee. Site-specific Mines Act permit including appropriate reclamation security, together with inspections by MEI staff, will ensure appropriate management of mineral or coal exploration and development.

An enhanced referral may be utilized for activities proposed to occur at sensitive sites. Specifically for access-related activities proposed for such areas, the KBLUP Access Management Guidelines (section 5.12) outline the referral process. An enhanced referral may involve some combination of: wider than normal range of referees; public notification and consultation; pre-approval site inspections; and an expectation that enhanced mitigative measures may be required. In the case of proposals for new road access in sensitive areas, the enhanced referral may involve a regional committee of technical experts from appropriate government agencies.

In the case of major new mines, or major expansions of existing mining operations, which exceed thresholds defined in the Reviewable Projects Regulation, the Environmental Assessment Process will be applied, prior to projects proceeding to the permitting stage.

For subsurface energy resources, the Oil and Gas/Geothermal Tenure Review Process and Activity Referral Process will be utilized. The Environmental Assessment Process applies for processing facilities and pipelines under Provincial jurisdiction that exceed the threshold defined in the Reviewable Projects Regulation".

(1) The majority of the Crown portion of the Creston Valley is within the Creston Valley Wildlife Management Area.

(2) Forest Cover maps do not define Open Forest and Managed Forest. "Shrublands" is a misnomer, but is retained as it is a Forest Cover definition.

Back to Table of Contents

W3C HTML 4.01

• Ministry Home
• Government of British Columbia
Kootenay Region
Ministry of Sustainable Resource Management
The Minister News Search Reports & Publications Home Contacts

Kootenay/Boundary Land Use Plan

Implementation Strategy

Kootenay Inter-Agency Management Committee

June 1997

Chapter 4: Protected Areas

4.1 Introduction

One of the purposes of regional and sub-regional land use planning processes, including the Kootenay/Boundary Regional Land Use Plan, has been to implement the provincial government's protected area strategy (PAS). The PAS has two goals:

Goal 1 - Ecosystem Representation: To protect viable examples of the natural diversity of the province, representative of the major terrestrial, marine and freshwater ecosystems, the characteristic habitats, hydrology and landforms, and the characteristic backcountry recreational and cultural heritage values of each ecosection.

Goal 2 - Special Features Protection: To protect the special natural, cultural heritage and recreational features of the province, including rare and endangered species and critical habitats, outstanding or unique botanical, zoological, geological and paleontological features, outstanding or fragile cultural heritage features, and outstanding outdoor recreational features.

The Kootenay/Boundary Regional Land Use planning process dealt primarily with the PAS Goal 1. Further work is required to complete the Goal 2 process.

As a result of the Kootenay/Boundary Regional Land Use planning process, the provincial government, in July 1995, established sixteen new protected areas. Through designation under the provincial Park Act, all new protected areas have become class A provincial parks. Consequently, the terms 'provincial parks' and 'protected areas' are used interchangeably in the KBLUP Implementation Strategy.

The establishment of the new protected areas plays a key role in the realization of the Plan's environmental conservation objectives, particularly through contribution towards general biodiversity maintenance and the protection of key habitat areas for maintenance of species health. The parks also contribute significantly to regional recreational and cultural heritage objectives, as well as to long-term economic objectives.

The following section identifies general management objectives and strategies for the region's new protected areas. A description of each new park and an indication of further planning priorities is included in Table 4.1.

4.2 General Management Objectives and Strategies for New Parks in the Kootenay/Boundary Region

PROTECTED AREA OBJECTIVES	MANAGEMENT STRATEGIES
Park Planning	
1. To develop comprehensive park master plans, over time, for each new protected area in order to ensure the maintenance of the conservation, recreation and cultural heritage values within the new protected areas.	1.1 Park master plans will be developed for each new protected area in accordance with the availability of budget resources and the general park planning priorities identified in the overview of new protected areas within Appendices 1-7. 1.2 Park master plans will be developed with the benefit of extensive public and inter-agency participation. Among other things, the plans will define park-specific management objectives, acceptable levels of use, accepted uses, zoning, and other strategies that will minimize conflicts, help ensure the integrity of important park values. 1.3 Park master planning processes will consider existing uses and management objectives and strategies (as identified in this regional plan and in operational level plans) for lands that are adjacent to the protected areas. 1.5 Provincial park master planning processes will include consultation with tourism industry representatives in order to examine potential commercial opportunities within provincial park land, subject to the prime goal to protect the conservation, recreation and cultural heritage values within the parks. Commercial opportunities will be assessed with a view towards limiting / locating the development of physical commercial infrastructure (e.g., roads, lodgings, staging areas, etc.) on the periphery of park boundaries in order to minimize park impacts. 1.6 Pending the development of comprehensive park master plans for each new protected area, the management guidance provided in BC Parks' *"Management Direction Statements"* will be used to direct park management and operations.

	1.7 Upon completion of Goal 2, management direction statements will be prepared for those new protected areas. 1.8 Resource issues adjacent to park boundaries will be identified and the responsible govenment agencies will work together to address them.
Pre-Existing Tenures and In-Holdings	
2. To recognize the legal rights of pre-existing tenure holders and landowners within newly established parks in the region, and to deal fairly with those interests.	2.1 Pre-existing mineral and timber tenures and other tenures / encumbrances associated with commodity extraction (e.g., gravel reserves) will be discontinued within new protected areas. The terms of discontinuance will be negotiated with owners of pre-existing tenure interests, in accordance with provincial policy respecting resource rights compensation. Tenure discontinuance negotiations will also consider ongoing silviculture obligations (e.g., free-to-grow requirements), and rehabilitation of harvested areas and roads in key locations. 2.2 Pre-existing tenures within new protected areas for utility rights-of-way, communication sites, grazing, commercial backcountry recreation, commercial heli-skiing or hiking, guide-outfitting, trapping, water works and use, etc., will be permitted to continue, in accordance with the existing management conditions attached to those tenures. In the future, the management conditions attached to those tenures may be amended to comply with the requirements of park master plans that are developed for individual protected areas. 2.3 Existing grazing authorizations issued under the Range Act within new (1995) protected areas will continue to be managed according to the Range Act are fully transferable. Where pre-existing tenures other than Range Act tenures lapse or are voluntarily surrendered by a tenure holder, the province is under no obligation to re-issue the tenure rights to a new party. Whether or not tenure rights are to be re-issued should be resolved through the protected areas management planning process. 2.4 Existing owners of private land in-holdings within new parks will continue to exercise their property rights, and existing opportunities for access to those properties will be addressed.
Natural Occurrences	
3. To protect key park values and adjacent private property, as appropriate, from natural occurrences in protected areas.	3.1 Where appropriate, natural occurrences in new parks, such as fires, insects, forest diseases, will be managed as in other provincial parks, through consultation and joint action by BC Parks, BC Environment and the Ministry of

	Forests at the District level. 3.2 Fire management plans will be developed for areas within new parks that are proximate to residential settlement, and where traditional land management includes burning for winter range enhancement.
Park Management	
4. To maintain ecosystem representation and ensure protection of key representative features.	4.1 Park management emphasis will be placed on maintaining the ecosystems and features for which these areas were established. 4.2 Parks will be managed to comliment biodiversity objectives across landscape units, where appropriate. 4.3 Where existing grazing tenures occur, alpine and subalpine grassland meadows will be maintained in conjunction with MOF through application of high elevation grassland guidelines. 4.4 Sound park management relies on good resource information. BC Parks, BC Environment and the Ministry of Forests will work together to collect resource inventory for the new parks. 4.5 The natural diversity of previously harvested sites and affected habitats will be restored through negotiation of silvicultural obligations. 4.6 Previously open forests and grasslands have become ingrown as a result of fire suppression. Where appropriate, vegetation management will be undertaken primarily using fire to restore natural grasslands.
5. To ensure protection of key species and their habitats.	5.1 BC Parks will work with other agencies to ensure connectivity of wildlife habitat between the park and surrounding area. 5.2 Opportunities to establish grizzly bear benchmarks for scientific study and management will be investigated. 5.3 Rare, endangered and at risk species, and their habitats will be protected. 5.4 Ungulate habitat and cover and site specific features will be considered in management processes.
6. To maintain backcountry recreation opportunities.	6.1 While BC Parks will continue to manage parks to provide a wide range of recreational experiences, protected areas will provide the primary opportunities for primitive and wilderness recreation. Where appropriate, existing

	access and trails within protected areas may be closed or decommissioned to support primitive recreational experiences. Similarly recreational access to some areas may be limited to maintain the quality of recreational experience. 6.2 Levels of recreational use and associated impacts will be monitored and management applied where necessary to maintain the wilderness qualities, where appropriate. 6.3 BC Parks will work with MOF to promote good visual design of logging and appropriate access management in areas adjacent to parks.
7. To plan and manage parks in a manner which reflects the cultural heritage.	7.1 Local First Nations will be consulted to establish traditional use in the area. 7.2 Options to work in cooperation with First Nations in the management of area will be identified in the treaty process. 7.3 European history will be considered in the management actions.

Table 4.1

New Protected Areas (Class A Provincial Parks) Established as a Result of the Kootenay/Boundary Regional Land Use Plan

Park Name	Approx. Area (ha)	Priority for Develp't of Park Master Plan
East Kootenay		
Akamina - Kishinena	10,921	Moderate
Bugaboo	13,646	High
Upper Cummins	6,1081	Low
East Purcells	36,938	Moderate
Elk Lakes	17,245	High
Gilnockie	2,822	Low
Height of the Rockies	53,964	High
subtotal	*141,717*	
West Kootenay		
Gladstone	39,361	High
Goat Range	78,936	High
Granby	40,845	High

Kianuko	11,677	Moderate
Lockhart Creek	3,751	Moderate
West Arm	25,254	High
Syringa	4,191	Low
Kokanee Glacier Extension	6,203	Moderate
West Purcells	32,662	Low
subtotal	*242,880*	
Total Area	***383,182***	

Note: the Findlay corridor within the East Purcells is protected under the *Environment and Land Use Act.*

Back to Table of Contents

W3C HTML 4.01

• Ministry Home • Government of British Columbia
Kootenay Region
Ministry of Sustainable Resource Management
The Minister | News | Search | Reports & Publications | Home | Contacts

Kootenay/Boundary Land Use Plan

Implementation Strategy

Kootenay Inter-Agency Management Committee

June 1997

Chapter 5: Kootenay-Boundary Economic Transition Plan

5.1 Economic Transition Background

The Kootenay-Boundary Land Use Plan (KBLUP) will contribute to the long term environmental, social and economic sustainability of the region. By creating land use certainty, the KBLUP provides a basis for private and public planning and investment in natural resource and community development. However, the KBLUP implies change to historic methods of resource management. Therefore, there is need for both short and long term transition planning, both at the community level and with respective to particular sectors of the economy.

Implementing the KBLUP over the next five to ten years will bring about some potentially substantial changes for individual families, various communities and the region in general. Given this adjustment, the region will go through a period of economic and social transition to move to the prescribed sustainable future envisioned in the KBLUP. This transition needs to be planned and implemented in a cooperative manner between workers, communities, industries, First Nations, and all levels of government.

The Kootenay-Boundary Economic Transition Plan (KBETP) is comprised of the following key components:

- an Inter-Agency Transition Committee;
- a set of ongoing and new initiatives.

Economic Transition Planning

Economic transition planning is a phrase used in this document to describe the way in which government is able to respond to changes in regional land use.

Building a transition plan requires the following types of information:

- establishing a framework (objectives, policies, programs);
- understanding the current situation (profile, outlook, "base case");
- defining the impacts of proposed changes (multiple accounts analysis);
- assessing vulnerability or risk due to changes (risk assessment);
- identifying opportunities, resources and an action plan.

Establishing a Framework

Economic development objectives were developed in 1994 by the Kootenay Regional Advisory Group and provide an appropriate base for KBLUP transition planning. They are as follows:

- to encourage diversification of the region's economy;
- to encourage economic development which benefits the greatest number of communities in the region, while minimizing risk to others;
- to encourage and provide regional support to community-based economic development efforts;
- to pursue implementation of economic development initiatives which maximize use of the existing labour pool and provide new employment opportunities for future generations;
- to be selective about economic development opportunities, focusing on those which are sustainable in the context of the natural environment and which offer the opportunity to enhance or improve social conditions within the region and with communities;
- to integrate economic planning with land and resource decisions.

There is an extensive list of policies, programs and associated resources to support economic transition. Some of these include:

Provincial and Federal Government:

- Resources Jobs Commissioner
- Community Skills Centres
- Forest Worker Agency
- Community Futures
- Human Resources Development Canada
- Skills Now
- Ministry of Small Business, Tourism and Culture, and other government ministries
- Grazing Enhancement Fund

Crown corporations and other non-governmental organizations:

- Forest Renewal B.C.
- Columbia Basin Trust
- Columbia Basin Fish and Wildlife Compensation Fund

Understanding the Current Situation

A variety of information sources can be drawn upon to ensure a current and complete knowledge of the economic, social and environmental situation in the Kootenay-Boundary region. Some of these include:

- sector and community profiles,
- base case information from the multiple accounts analysis,
- job tracking and economic trend information,
- regional economic strategies such as the 1994 KRAG economic plan, and
- community visions and economic strategies.

Defining the Impacts and Assessing Vulnerability or Risk

A multiple accounts assessment (MAA) framework was used to describe the environmental, economic impact, and community implications of the KBLUP Implementation Strategy. The MAA evaluates the integrated effects of implementing the Forest Practices Codes, the KBLUP and other provincial strategies (e.g., the Grizzly Conservation Strategy). This assessment is an important source of information for the development of the transition plan. It provides an analysis of potential employment and income impacts for sectors likely to experience a reduction in activity, and also highlights those sectors that may benefit from the KBLUP.

However, the analysis of employment and income impacts does not identify the location and timing of these impacts, or provide an indication of which communities may be the most vulnerable to employment loss, in terms of current economic dependencies. It also does not provide an understanding of what those potential impacts may mean for any particular community (i.e., while employment and income may be affected, will this jeopardize a community's longer-term economic health?).

To overcome this lack of community specific information, government will need to work in partnership with communities. A focus of this work will be to understand which communities are most vulnerable to change and help prioritize action plan initiatives.

Current Realities

There are a number of current issues that will have some influence on the creation and implementation of the regional economic transition plan:

- the March, 1995, government land use plan announcement identified many economic initiatives; where appropriate, the economic transition plan for the KBLUP Implementation Strategy will reinforce these earlier initiatives;
- many communities in the region have invested significant efforts to develop community visions and economic development strategies; this previous work will provide a basis for economic planning;
- the strategic regional land use vision contained in the KBLUP should be strongly considered in the investment decisions made by key economic development agencies; as much as possible, Forest Renewal BC, Columbia Basin Trust, and the KBLUP direction should be consistent;
- current fiscal restraint evident at federal and provincial levels will necessitate the creative use of partnerships among all participants in social and economic transition (local government, senior government, industry, labour and other key sectors).

Development of a Kootenay-Boundary Economic Transition Plan

The transition plan presented below is the product of the various components outlined above, and most importantly the input from various regional government and non-government representatives. While the framework is regional and sectoral, its fundamental focus is the community.

The Kootenay-Boundary economic transition plan is presented in two sections:

1. KBETP reporting structure,
2. Economic transition plan components.

5.2 The Kootenay-Boundary Economic Transition Plan

The Kootenay-Boundary Economic Transition Plan (KBETP) has been developed to accompany the Kootenay-Boundary Land Use Plan (KBLUP) Implementation Strategy. The plan is both proactive, working with communities and industry sectors prior to any potential disruption, and responsive, lending assistance to communities and workers in need.

The objectives of the KBETP are to:

1) ensure communities and individuals have access to economic development initiatives;

2) provide assistance to workers and their communities during employment disruptions;

3) reinforce government's commitment to the 1995 KBLUP announcements;

4) enhance some of the 1995 announcements; and

5) develop new initiatives that will assist individuals and their communities through the transition over the next decade.

KBETP Reporting Structure

To undertake the transition plan the following reporting structure is being developed. A regional Inter-Agency Transition Committee will be established. Close linkages will be maintained with the Kootenay-Boundary IAMC, and therefore the resource agencies within the region, by having IAMC representation on the Transition Committee. At the provincial level, coordination between government agencies necessary to address economic transition issues related to land use planning is the responsibility of the Resource Management Division. The provincial government agenices participating in the regional Inter-Agency Transition Committee will, with support from the Resource Management Division, report to the Deputy Minister's Committee on Land Use. This will ensure senior government understanding and support for the work of the committee.

The Inter-Agency Transition Committee will have two main functions:

1) in partnership with communities, to provide leadership overseeing the

implementation of the transition plan, and immediate assistance to communities experiencing employment disruptions;

2) to co-ordinate the various agents' activities within government to ensure an integrated delivery of the government's commitments.

The following provincial government agencies and staff will be represented on the Inter-Agency Transition Committee:

- Resources Jobs Commissioner,
- Ministry of Education, Skills and Training,
- Member Representative from the Kootenay-Boundary IAMC

The following additional organizations within the region will be invited to participate in order to ensure the necessary coordinated approach to economic transition:

- Columbia Basin Trust
- Forest Renewal B.C.
- Human Resources Development Canada.

A Transition Committee Chair from within the provincial government will be assigned to lead and coordinate member functions. The Chair of the Transition Team will report regularly to the Deputy Minister's Committee on Land Use.

Economic Transition Plan Components

A. Community Monitoring

Monitoring the economic situation of communities in the Kootenay-Boundary region will help to identify which communities are at risk before major employment disruptions occur, and will provide local information about community planning efforts and employment trends. The Transition Committee will meet regularly, or as needed, to discuss this monitoring information.

B. Sectoral Initiatives

The following initiatives are intended to focus on sectors where the impacts are likely to occur and on sectors which present the most opportunity for future development. The section begins with the forestry sector, followed by the mining and energy sectors, agriculture, and tourism.

1. Forestry

The transition of the forestry sector from its current state to that envisioned in the KBLUP will occur over the next ten years. The projected reduction in available timber for harvest from Crown land may affect communities in a number of ways. Some areas may not be affected at all; however, in other areas companies may respond by reducing the work year, by laying-off employees, or by shutting down harvesting and milling operations.

Employment increases that could result from more labour intensive forestry practices, planning requirements, and potential increases in value added manufacturing are not reflected in the potential reduction in person years of emloyment outlined in the multiple accounts analysis. Given the time frame, much of the reduction may be absorbed through attrition rather than lay-offs. However, the timing of impacts should not mask the changing face of community economic dependencies in the region, and individual impacts on workers and families.

To address these changes, the KBLUP Implementation Strategy has highlighted opportunities, or values, that can contribute to an enhanced forestry sector in the region. The following initiatives expand on these opportunities and are intended to ensure that those who do face job disruptions are provided with support and re-employment opportunities.

Forest Community Economic Development Program

Forest Renewal BC is funding the Forest Community Economic Development Program to help eligible forest dependent communities and First Nations strengthen their forestry sector. Communities have access to a limited amount of resources through the following four funds:

- the Forest Sector Planning Fund - the fund is intended to provide support for development of forest sector profiles and action plans;
- the Project Feasibility Fund - provides funds for forest dependent communities to commission forestry based development studies, develop business plans, and prepare investment promotional material;
- the Immediate Response Fund - the fund is intended to help forest dependent communities develop a community transition plan in response to an immediate employment crisis and to identify new employment and economic opportunities to replace lost forest jobs;
- the Implementation Fund - supports implementation of local forest sector action plans and economic development initiatives.

The program has provided funds to a number of Kootenay-Boundary communities to begin planning, and identify and develop new forestry opportunities. The following seven communities have recently accessed funds:

- Golden
- Revelstoke
- Creston
- Kaslo
- Nakusp
- Grand Forks
- Ktunaxa-Kinbasket Tribal Council

Golden, Revelstoke, Creston, Kaslo and the Ktunaxa-Kinbasket have completed plans and are developing specific project proposals. All forest sector communities will be encouraged to access this funding envelope.

Forest Worker Agency: Proposed

Bill 12 (BC Forest Renewal Amendment Act, 1996) was given Royal Assent this summer by the British Columbia Legislature. The Act requires that Forest Renewal BC establish a Forest Worker Agency to provide for priority placement of displaced forest workers onto Forest Renewal BC projects. Criteria will be established to determine who qualifies as a displaced forest worker. (Note: The Agency is under development and the descriptions here may not fully reflect the initiative when delivered.)

The program is intended to include the following general actions:

- identification and tracking of displaced forest workers;
- needs and ability assessment to identify individual employment goals and "job ready" workers;
- identification of training requirements and/or options;
- identification of suitable Forest Renewal BC funded projects.

The following initiatives are scheduled or underway:

- An operating mandate for the Forest Worker Agency is currently under development at Forest Renewal BC. The program is scheduled to be operational by Fall 1997.
- While the program is under development, Forest Renewal BC will continue to give priority to licensee-led projects which propose to employ displaced forest workers.
- Before the implementation plan is developed, Forest Renewal BC will undertake consultation with stakeholders to find out how their concerns can be addressed.
- The Kootenay-Boundary region is scheduled to be the second region for implementation of the Forest Worker Transition Program, after the Pacific Region.

Contact Forest Renewal BC for further information.

Forest Community Business Program

Forest Renewal BC, together with Community Development Corporations (CDCs) and Business Development Bank have partnered to provide business start-up and expansion financing that would not otherwise be available to forestry related companies. Loans to a maximum of $75,000 are available through CDCs. The Business Development Bank is able to loan up to $250,000.

More funds are being made available as needed. A greater number of loans are being accessed through CDCs than through the Credit Union program. Forestry Renewal BC is currently bringing on additional lending capacity to increase the availability of loans in the $75 000 to $250 000 range.

Forest Renewal BC Forest Land Base Investment

Forest Renewal BC funds ongoing land based projects across the province. For 1996/97, Forest Renewal BC has targetted investments of $34 million for land based projects in the Kootenay-Boundary region with the potential of supporting more that 500 new and existing forest sector jobs. The 1997/98 budget is expected to be similar. Plans are being developed for the Kootenay-Boundary region which identify priority areas for silviculture and resource investment projects. Investments for 1996/97 include:

- $13 million for 221 watershed restoration projects - aimed at renewing the forest environment and providing jobs;

- $12 million for 69 enhanced forestry projects - to increase the forest productivity, enhance the value of timber harvested, increase the harvestable land base, and create jobs;
- $9 million for 134 operational inventory projects - to provide better information on timber and non-timber resources.

Specific Projects (1996/97 examples):

- Italy-Sutherland Creek Watershed Restoration Project (Boundary Forest District) - funding $138 381;
- Forest Health Inventory (Invermere Forest District) - funding $190 650;
- Silviculture projects, spacing pruning an surveys (Golden Forest District) - funding $477 000;
- Fish Habitat Inventory (Kootenay Lake Forest District) - funding $40 000.

The following initiatives are scheduled or underway:

- Forest Renewal BC and the Ministry of Forests are undertaking a gap analysis to identify additional investment projects for the 1997/98 fiscal year.
- The Ministry of Forests is undertaking longer-term investment planning that will identify a range of project opportunities beyond the 1997/98 fiscal year. The objective of this planning is to direct silviculture investment to projects that will lead to the largest increase in fibre supply.
- Target projects to specific areas where job loss is expected - the Economic Transition Committee can have a significant role to play in this area.

Contact Forest Renewal BC, the Ministry of Forests, or the Resources Jobs Commissioner for further information.

Fibre Supply and Availability

The Ministry of Forests is working on a number of timber resource supply issues that are intended to mitigate some of the reductions in the timber supply and meet fibre allocation requirements. The following initiatives are divided into a section covering some of the ongoing efforts to mitigate the timber supply reductions, and a second section dealing with the allocation of harvestable timber.

Fibre Supply Mitigation

The following examples are aimed at maximizing the volume of timber coming from the harvestable land base.

- **Timber supply mitigation** - The Ministry of Forests is continuing its preparation of a report, "Nelson Forest Region Forest Mitigation Strategy," which is evaluating the forest resource in the Nelson Forest Region to determine options for mitigating AAC reductions. Job creation stemming from this strategy are related to harvesting of problem forest types and increasing silviculture activity.
- **Deciduous Timber Resources and Super Utilization** - Two recently completed studies, "Hardwood Utilization in the Nelson Forest Region" and the "Kootenay

Super-Utilization Study" are currently under review by the Ministry of Forests.

- **Enhanced Forest Management Pilot Project** - This project is underway in the Invermere Forest District to implement "enhanced" forest management concepts. The project will embrace the full range of resource values and will also emphasize social values, such as employment and community stability. Findings from this project may then be used to define forest practices in all zones.
- **Kinbasket Lake Underwater Logging** - Forest Renewal BC funded a study to develop the technology for harvesting underwater standing timber. The report is expected in late 1996 and should provide information on the economic feasibility of this harvesting system, the quality of wood recoverable, and some estimates of the potential volumes available for salvage.

Fibre Availability:

The following efforts are aimed at ensuring producers have access to all available sources of wood.

- **Small Business Forest Enterprise Program** - 80 887 cubic metres of timber in the Kootenay Lake Forest District, previously unallocated, was divided into a 55 887 cubic metre allotment for one or more replaceable forest licences, and an allocation of 25 000 cubic metres for two community forest ventures in the Kaslo and Creston areas. Allocation of these licences is expected soon.
- **Woodlot Licences** - the 1995 KBLUP economic strategy announced that 48 new woodlot licences would be created in the region. Completion of this allocation is scheduled for December, 1997. As a result, the total number of woodlots in the region will increase to 101. Some have been advertised and government is continuing to complete the allocation.
- **Small Scale Salvage Program** - A small scale salvage program can enhance resource stewardship by more fully utilizing timber not normally processed, thereby providing employment opportunities for small operators and economic benefits to small communities. The Arrow Forest District is the pilot district for the Kootenay-Boundary area.
- **Reallocation of Small Business Timber Sales** - Reallocation of small business timber sales from SBFEP Category 1 sales to 16.1 sales. Initiative will provide more timber to smaller processors and remanufacturers.
- **Timber Salvage from Lakes and Reservoirs** - Various licences have been awarded in the Nelson Forest Region to salvage floating merchantable debris and sunken logs, and to harvest underwater standing timber. The Nelson Forest Region, with the assistance of Forest Renewal BC, is exploring ways to increase salvage in these areas. A Timber Sale Licence has been tendered for salvage rights on Kootenay Lake, although no decision has been made to date.
- **Regional Log Sort Yard Initiative** - Objectives of a log sort yard are better utilization and economic recovery of logs through optimal use, higher value added and more employment per cubic metre, and better access for smaller manufacturers and artisans. Prior to developing such a yard, a regional study is recommended to assess the feasibility, location, organization, and appropriate level of government involvement. Implementation of the study findings are recommended if the project is feasible.

Contact regional or district offices of the Ministry of Forests for further information.

B.C.'s Value Added Strategy

The objective of B.C.'s Value Added Strategy, announced in the Spring of 1996, is intended to assist the value added wood manufacturing sector grow as a means of achieving B.C.'s forest jobs strategy.

Many of the essential ingredients to an expanding forestry value added sector are dealt with in other sections. Fibre supply and availability issues are dealt with above as is access to investment funds. Training and other long-term forestry education initiatives are discussed in the next section. Two other ongoing initiatives in the Kootenay-Boundary region deal with wood products promotion and development and are briefly described here:

Kootenay Value Added Wood Products Promotion and Development:

Kootenay Value Added Wood Forum - The forum, Wood Works '96, is the third annual wood products value added conference held in the Kootenay-Boundary region and is scheduled for October, 1996. The objectives of Wood Works '96 are to:

- increase the production, marketing and skill capabilities of existing manufacturers through a trade show;
- exhibit woodworker's achievements through a juried competition;
- encourage creative woodworking through a student competition;
- increase the awareness of business career opportunities in the wood industry; and
- highlight educational and training career opportunities for regional students.

Kootenay Woodvine Value Added Manufacturing Association - The Kootenay Woodvine is a value added manufacturing association established following the 1994 Kootenay Value Added Wood Forum at Creston. Woodvine's goals for 1996/97 are to develop communications, such as a quarterly journal, to develop a directory of Kootenay-based value added manufacturers, and to develop training sessions in production and business.

Value Added Marketing Program - funded by Forest Renewal BC which focuses on support for producer groups.

Forestry Training and Education

Forest sector training covers a wide range from woodlands based training to high value-added production training. The Kootenay-Boundary region has numerous training opportunities in all aspects of forestry education. The following summarizes the majority of programs available within and outside the region:

Wood Products Manufacturing Training

Programs for a higher skilled value added wood products manufacturing labour force is a major focus of the provincial value added strategy. The following programs are part of that focus:

- Kootenay School of the Arts, Wood Products Design Program - Nelson;
- Selkirk College, Woodworking program;

- College of the Rockies, planer mill maintenance and the Wood Products Institute;
- Value Added Skills Centre - Abbotsford;
- National Centre for Advanced Wood Processing - UBC.
- Value Added Training Program - wages and training for value added operations funded by Forest Renewal BC.

Forest Renewal BC Sponsored Local Training Activities

Forest Renewal BC sponsors numerous short-term training that fall under three broad headings:

- Forest Worker Employment Training Program (FWETP) - assists with tuition for at-risk or displaced forestry workers;
- Land-based activities - contain training component if workers require new or up-graded skills;
- Other training - funding proposals are submitted to Forest Renewal BC and are assessed to determine employment linkages and benefits to the forest industry and workers.
- Examples of current training include the following:

- entrepreneurship training;

- cedar bagging in Golden;
- value-added manufacturing;
- forestry technicians school in Greenwood; and
- planers and graders for a small lumber mill.

Revelstoke Community Skills Centre

With the assistance of a forestry training coordinator, training programs being developed in conjunction with mill and woodlands employees from the Revelstoke area include the following:

- computer skills,
- cable logging,
- multi-skilled development (to expand the skill set of forestry workers in order to reduce their dependency on a single, seasonal industry), and
- career planning.

The following is scheduled or underway:

- Forest Renewal BC is undertaking research on what skills are needed and anticipated, and what skills are available. Based on this research, plus the proposals that have been submitted to Forest Renewal BC, they hope to develop policy on funding training activities.
- Once policy is developed, it may be possible for Forest Renewal BC to become more pro-active (e.g., identify areas in the forestry industry where training may be needed and then promote training activities among employers and workers).

Contacts for further information:

Those interested in these and other training program should contact local community Skills Centres, regional offices of the Ministry of Education, Skills and Training, Human Resources Development Canada, or Forest Renewal BC.

2. Mining and Energy Sector

The KBLUP Implementation Strategy ensures that opportunities for energy, mineral, and coal resource exploration and development will be available outside protected areas. Land use designations help to provide the necessary land use certainty required to attract the level of investment needed for exploration and development by maintaining opportunities in all non-protected areas.

The KBLUP, however, designates 16 new protected areas that will prohibit exploration and development opportunities for mining and energy projects. While this does not affect existing operations, it does limit new development potential and associated employment benefits.

The following projects are in various stages of the environmental review process:

- **Mining projects:** Fording Cougar Pit - expansion of Greenhills Mine.
- **Energy projects:** Hydro electric power plant projects: Keenleyside, Waneta, Seven Mile, Revelstoke Unit 5, Brilliant dams.

Initiatives that are ongoing and will help to further mining and energy development in the Kootenay-Boundary region include:

- **Geo-physical Survey:** the airborne regional geophysical survey, funded by the Government of BC, is intended to aid in the search for Sullivan Mine-type related mineral occurrences. Results from two of the three areas surveyed in the East Kootenays were released in July. Results from the remainder of the survey will be released in early 1997. To date, the survey has led to new claims staking, but it is much to early to know if significant new mineralization will be found as a direct or indirect result of this survey. Moreover, development of any new mines would take a number of years, and would be partly dependent on external factors such as international markets.
- **Prospectors Assistance Program:** This program provides funding for prospectors. In the last two fiscal years, an average of $100,000 per year in applications have been approved under this program for the Kootenay-Boundary region. It should be determined if further funding is warranted.
- **Industrial Minerals and Value-Added Processing:** The Kootenay-Boundary region leads the province in industrial mineral production. Government is committed to encouraging the exploration of new opportunities in industrial minerals and value added processing, such as silicon by-products and construction building blocks. B.C. Government sponsored training in industrial minerals prospecting is scheduled in the Kootenay region for the Fall, 1996.
- **Columbia Valley Energy Development:** The Columbia Valley Energy Options study was completed in 1996. The objective of the study was to identify and assess cleaner and more affordable energy options. The study results indicate that satellite LNG or propane, geothermal heat pumps, and/or demand side management are promising energy options. Liquid natural propane (LNP) satellite stations appear to

be the most promising for short-term development. Communities are pursuing these options with the provincial government.

- **Independent Power Producers:** A number of independent power producer projects have been proposed for the Kootenay-Boundary region. They include a wood waste power and natural gas generator at Skookumchuck for use in the pulp mill, with any surplus power sold to BC Hydro.

3. Agriculture

The objective of the KBLUP Implementation Strategy is to maintain the current level of grazing activity in the region. However, a 5 - 10% reduction in AUMs will likely result in localized areas, because of increased grazing management requirements of the FPC, new protected areas, and areas with site specific management requirements. The Implementation Strategy attempts to mitigate these impacts by enhancing grazing opportunities in the region and encouraging diversification in other areas of the agriculture sector.

Grazing Enhancement Fund - The Grazing Enhancement Fund (GEF) for the Kootenay-Boundary region was announced in 1995. The purpose of the GEF is to maintain and enhance range resources and livestock grazing opportunities, while meeting the conservation and environmental objectives outlined in the Kootenay-Boundary Land Use Plan.

Funding

For the Kootenay-Boundary region the GEF is worth $750,000 per year for five years. Funds not expended in one year may be requested for use in subsequent years. Forecasts for future spending will be part of the normal budgeting process. Qualifying projects are eligible for 100% funding from the GEF, or partial funding where cost-sharing or partnering is proposed.

Current Status

A Range Enhancement Advisory Committee (REAC), comprised of ranching, wildlife, environment, First Nations, timber and provincial government representatives has been created to review and assess funding proposals. The REAC has been encouraging parties affected by the implementation of the Land Use Plan to develop management strategies and, if appropriate, apply to the GEF for implementation funding.

The REAC is beginning to assess funding applications from the region; however, it has not yet recommended the approval of any project proposals. If the REAC determines that an area is going to be adversely affected by the implementation of any land use decisions, it could adopt a proactive policy and seek partners in implementing projects under the GEF.

Areas likely to be adversely affected by land use planning should be identified and access to the GEF should be promoted. Contact regional offices of the Ministry of Agriculture, Fisheries and Food for further information.

Agri-tourism Value-Added Conference - An agri-tourism and value added products conference is scheduled for November 29, 1996. The conference will provide workshops on business aspects of agri-tourism and value added products. Experts will be on hand to provide business start-up, marketing and development information. The conference is being funded by "Partners in Progress" and is being organized by the Ministries of Agriculture, Fisheries and Food, and Small Business, Tourism and Culture.

Niche Product Newsletter and Part-time Coordinator - An Agriculture Niche Products Study was undertaken to examine regional opportunities and was followed by a workshop in March 1996. The study and workshop were sponsored by the Ministry of Agriculture, Fisheries and Food, and the Ministry of Small Business, Tourism and Culture. Recommendations coming from the workshop (March, 1996) are to hire a part-time coordinator and produce a newsletter.

- The newsletter would provide up to date information on regional activities in specialty agriculture as well as information on new technology and business practices.
- The Ministry of Agriculture, Fisheries and Food has been developing production, harvesting, and marketing information for many of these products and will act as the facilitator for information dispersal and industry organization.

Farm Business Development and Management Training - The Ministry of Agriculture, Fisheries and Food has offered numerous courses in the Kootenay-Boundary region. One program, the Canadian Farm Business Management Initiative is a joint offering of the B.C and federal governments. Several other types of training programs are being examined in areas of agriculture business. The farming community will be consulted for content requirements and delivery of courses.

Agriculture Extension Initiatives: The Ministry of Agriculture, Fisheries and Food has a number of ongoing and developing extension initiatives in the Kootenay-Boundary area. Examples are:

- work with the Christmas Tree industry in the East Kootenay to modify cultural and marketing practices in order to stay competitive and open up new markets;
- the development of the late season cherry industry in the Creston Valley targeted at high return non-traditional markets.

4. Tourism Sector

Commercial tourism and outdoor recreation opportunities will benefit from implementation of the Kootenay-Boundary Land Use Plan. Examples of initiatives intended to enhance tourism stays and take advantage of new protected areas include the following:

Commercial Backcountry Recreation (CBR): As part of the Economic Strategy outlined in the 1995 Land Use Plan, accelerating new applications for commercial backcountry recreation development in the Kootenay-Boundary region was given a high priority. Government continues its commitment to this sector's development and recognizes its importance to communities. BC Lands has committed to the CBR process by adding one additional staff to manage the approval process.

The following action is underway to further assist CBR development in the region:

- BC Lands is pursuing the use of temporary permits to aid smaller businesses develop

commercial backcountry operations,
- a review of the provincial CBR policy is currently underway.

Forest Renewal BC Recreation Program: The Forest Recreation Program was established for funding and enhancement of forest-based recreation projects and for the opportunity to promote forest values and support economic stability in forestry dependent communities. Three sub-programs comprise the Recreation Program: forest recreation management, forest interpretation, and forest recreation infrastructure. Communities should contact Forest Renewal BC for further information.

Recreation Strategy: The Tourism Action Society of the Kootenays has commissioned a recreation study "Nelson Forest Region Recreation Development and Management Strategy: Phase 1 - Kootenay Lake and Arrow Forest Districts Pilot Project."

The purpose of this study is to identify outdoor recreation projects on public lands not managed under the Commercial Backcountry Recreation policy. The study will assess the supply of existing outdoor recreation opportunities and identify where the available infrastructure can improve. The study will also provide recommendations for the future development, management, interpretation, and promotion of outdoor recreation sites, facilities, and trails, and will recommend processes for implementation of the strategy. Expected completion: end of March, 1997.

Circular Rail Excursion Tours: A recent conference was held to develop regional awareness and assess interest in developing "Heritage Triangle" circle rail tours. Participants came from B.C., Alberta, Idaho, and Montana. A feasibility study is now required to determine the concept's economic potential, followed by development of a business plan.

Rails to Trails: Rails to trails involves the conversion of unused railway corridors to hiking and biking trail systems. The Rails to Trails Council of BC recently conducted a "Boundary Pathway" project which has led to the convening of a rail trail management planning strategy. The planning strategy will involve stakeholders from different sectors including outdoor recreation, tourism, forestry, ranching, and BC Lands.

BC Parks Strategies: The Protected Areas Strategy has substantially increased the amount of land preserved from future industrial resource development, such as mining and forestry resource extraction. These newly designated lands offer many recreational opportunities. However, increasing the level of recreational activity on these lands will first require an assessment of the appropriate type and level of use to ensure environmental objectives are not compromised.

The Ministry of Environment, Lands and Parks is currently identifying and permitting existing use levels in protected areas. Further work will be necessary to identify suitable types and levels of additional use in these areas.

Kootenay-Boundary Tourism Marketing Analysis: Under the direction of the Tourism Action Society of the Kootenays, the study is intended to determine the market demand for a variety of tourism products in the Kootenay-Boundary region. This information will build on the recently completed tourism profile - "Tourism Profile of the Kootenay-Boundary Region: Phase I - Product Supply." The final outcome of these phases is a tourism development strategy for the region.

C. Major Project Development

There are a number of investment projects that will have a significant impact on the Kootenay-Boundary region. These developments benefit from the assistance of government during permitting and project review processes.

All major projects requiring environmental assessment are reviewed through the planning and permitting process by the Environmental Assessment Office and generally involve the Ministry of Employment and Investment. Recent major Kootenay-Boundary projects that are in, or have been in various stage of the environmental assessment process include the following:

- Mining/mineral processing projects: Fording Cougar Pit - expansion of Greenhills Coal Mine, Moose Creek magnetite mine, Bodie Coal Dump project, Elkhorn Quarry extension, McGillvray Coal development.
- Energy projects: Keenleyside Powerplant, Waneta Generation Station Upgrade, Cascade Heritage Power, Seven Mile Unit 4 generation station, Revelstoke Unit 5 turbine addition, Brilliant Dam hydro electric power plant projects, and Crowsnest Co-generation project.

Other projects not currently in the environmental review process, but which could be assisted include the following:

- Slocan Valley graphite mine, Silicon Plant in Kimberley, Kimberly ski and golf resort development, Circular Rail Tour development, Fernie Snow Valley, Island Lake Lodge, Mount MacKenzie, Kinbasket backcountry recreation proposals, Panorama Resort development.

The provincial government will maintain and enhance its efforts at assisting project developments by:

- ensuring that project proponents have early access to appropriate ministry liaisons at the Ministry of Employment and Investment and the Environmental Assessment Office, and that community and development proponents understand the regulations and permitting process;
- having the Ministry of Small Business, Tourism and Culture continue to assist where necessary with small and large project development in all sectors of the economy.

D. Columbia Basin Trust/Columbia River Treaty Downstream Benefits

The Columbia Basin Trust (CBT) will be an important means of project identification and source of investment funds in the Columbia Basin. The CBT was established by the Provincial Government in order to return a share of the downstream benefits derived from the Columbia River Treaty to the Columbia River Basin region. The CBT will be invited to be a member organization of the Inter-Agency Transition Committee.

The objectives of the CBT is to invest, manage or otherwise employ its income and resources for the ongoing benefit of the Columbia Basin. It will provide for economic development, the preservation and enhancement of the environment, and the general well-being of the people.

The CBT's primary planning tool is the Basin Plan; expected completion of this plan is July, 1997. One of the longer term considerations in drafting the Basin Plan is to create jobs through investment opportunities. The CBT will be an important resource for transition planning in the region. The Basin Plan will be developed with input from communities.

A complementary relationship between the KBETP and the CBT Plan will be ensured through the Inter-Agency Transition Committee.

E. Columbia Basin Fish and Wildlife Compensation Fund

The Columbia Basin Fish and Wildlife Compensation Fund was officially announced in June 1993 and is a joint initiative between BC Environment and BC Hydro. The fund was created to help sustain and enhance the fish and wildlife populations in the Canadian portion of the Columbia River Basin. Sixty fish and wildlife projects were funded in the 1995/96 fiscal year. Seventy-six projects have been approved thus far for the 1996/97 fiscal year.

While the Fund does not focus on economic development initiatives, projects funded under this program can result in spin-off benefits.

F. Community Strategies - in progress

Transition planning is based on the cooperative efforts of individuals, communities, local governments, the provincial government, and other Crown Corporations and organizations whose goal is a sustainable economy within a sustainable land use environment. In the case of the Kootenay-Boundary region. this transition planning reflects the vision within the KBLUP. The intention of the Economic Transition Plan is to make available a number of tools for individual communities and community members to use as they plan the future development of their economies.

The initiatives and programs outlined in the sections above are some of the tools communities can access to assist them in transition work. A proactive and effective way of ensuring this access is to establish some form of formal process that will link the efforts of all government levels, community organizations, and industry. Government recognizes the importance for communities to develop community driven and designed plans, and with the various tools outlined above, communities can more effectively direct their planning efforts. The following framework describes how the Provincial Government can contribute to this multi-partnered process.

Identifying Communities at Risk

The first priority is to work with individual communities to detemine community vulnerability and ensure awareness of available programs. This task can be made easier using several sources of information:

- community monitoring information,
- an assessment of community risk of employment loss, and

- knowledge of community organizational capacity.

This information must be combined with local input. Communities that require the most up front planning assistance will be identified through discussions between government and community representatives. This information will be reported directly to the Inter-Agency Transition Committee.

Community Planning

Communities may solicit the assistance of the Inter-Agency Transition Committee and its agencies for the preparation of community economic development plans. Through funding sources such as, where appropriate, the Forest Community Economic Development Program and other Forest Renewal BC envelopes, investment funding sources such as Columbia Basin Trust, and expertise from regional provincial government representatives, communities can identify goals, and planning and development priorities. In some communities this transition work has already begun. Other communities likely to undergo change in the next few years and in need of planning assistance will be identified and encouraged to access these opportunities.

Community Priorities

Numerous communities have already identified priority projects. A selection of some priorities can be grouped as follows.

Infrastructure projects: • road and highway work, • water, sewer and solid waste facilities, • downtown revitalization, • school construction, • hospital upgrades, • recreational services. **Forestry:** • value added manufacturing, • community forests, • woodlands projects, • integrated forest worker training, • alternative harvesting techniques.	**Tourism development:** • local trail development, • project planning and development, • marketing and promotion of tourism products, • hospitality training. **Small business development:** • small business training, • access to financing, • business information services. **Community Economic Development:** • strategic planning, • Economic Development Commissions.

Back to Table of Contents

•Top •Copyright •Disclaimer •Privacy •Government of British Columbia

W3C HTML 4.01

• Ministry Home
• Government of British Columbia
Kootenay Region
Ministry of Sustainable Resource Management
The Minister
News
Search
Reports & Publications
Home
Contacts

Kootenay/Boundary Land Use Plan

Implementation Strategy

Kootenay Inter-Agency Management Committee

June 1997

Chapter 6: Plan Management and Administration

The following sections identify measures to adopt, implement, monitor, and amend the Kootenay/Boundary Regional Land Use Plan and Implementation Strategy.

6.1 Plan Adoption

The Kootenay/Boundary Land Use Plan was announced in March 1995 and, as such, represents the approved, corporate policy direction of the British Columbia government. The Implementation Strategy will be presented to government for similar approval and sign-off by the Ministers of Employment and Investment; Forests; and Environment, Lands and Parks, as confirmed through execution of the *Letter of Regional Land Use Plan Adoption* (see preface). Such approval of the Implementation Strategy will follow a period of public and First Nations consultation and completion of a "20 year look ahead" analysis which is designed to provide greater clarity with respect to the compatibility and applicability of the management objectives, strategies and associated guidelines. Following approval, conveyance of the letter of adoption, together with copies of the plan documents to implementing government agencies will signal that the Implementation Schedule has been confirmed as approved, corporate policy direction of the British Columbia government.

The second method of KBLUP and Implementation Strategy adoption is declaration of the appropriate elements that pertain specifically to forest management practices that are relative to the three operational plans of the Code, as a higher level plan, pursuant to the *Forests Practices Code Act of British Columbia*. This is achieved by ministerial order, also signed by the Ministers of Employment and Investment; Forests and Environment, Lands and Parks. Further work is required to identify which elements of the KBLUP Implementation Strategy should be legally declared a higher level plan.

Adoption of the Kootenay/Boundary regional land use plan and implementation strategy using these mechanisms will signal both a policy and legal commitment to implement the plan according to its stated provisions.

6.2 Plan Implementation

Full implementation of the Kootenay/Boundary Regional Land Use Plan is anticipated to require a number of years to achieve. The budget capacity of the province, the complexity of specific projects and the need to integrate KBLUP implementation with existing legislated decision-making processes are key determinants for how many of the implementation activities can be achieved within a particular timeframe.

Delivery of the KBLUP Implementation Strategy will primarily occur through the ongoing delivery of government programs, policies and initiatives, pursuant to relevant legislation, regulations and resource management guidelines. For some agencies, the guidance provided through the KBLUP Implementation Strategy can be immediately incorporated into their decision-making following government approval of the Strategy. For example, individual permit approvals can be evaluated within the context of the Implementation Strategy. Alternatively, some resource uses are defined through a multi-year operational planning process (e.g., 5 Year Forest Development Plans and Range Use Plans) or permitting/tenure system (e.g., existing permits for production mines and commercial backcountry recreation tenures). It is important to note that integration of the KBLUP Implementation Strategy with such multi-year operational planning and permitting processes will occur over a number of years (see section 6.3).

In some cases, specific projects within the Implementation Strategy can be delivered by a single government ministry or agency, while most require an integrated approach involving several different government agencies working together. As a result, a coordinated approach to establishing implementation priorities is required.

Creation of an Annual Corporate Workplan

The Kootenay Inter-Agency Management Committee (IAMC) of the provincial government will oversee the development of an annual corporate workplan which identifies the priorities and necessary sequencing for implementation actions. The workplan will be created within the allocated budget resources of the agencies involved, recognizing that subsequent government direction could result in change to the annual workplan mid-stream. Working in concert with the Resource Management Division, the IAMC will ensure the necessary staff and funding is available and committed by each government agency to complete a Plan implementation action before it is placed into the annual workplan. The IAMC will also work with other levels of government and funding agencies, as appropriate, to ensure the annual workplan is coordinated with other initiatives ongoing within the region.

The corporate workplan will include:

1. Identification of priority projects that require the involvement of two or more ministries, for example:

- domestic watershed planning
- access management
- Provincial Grizzly Bear Conservation Strategy
- park master plans
- Wildlife Management Area plans

- range land rehabilitation
- recreation planning
- etc.

1. Identification of key supporting actions that are necessary to complete the priority projects, including both actions that require the involvement of two or more ministries and those that are solely the responsibility of one agency, but are linked to other KBLUP Implementation Strategy projects. Some examples of key supporting actions include:

- public consultation
- mapping and classifying domestic watersheds
- training in landscape design
- establishing visual quality objectives
- inventories upgrade, particularly for old growth forests
- monitoring and reporting system
- Enhanced Forest Management Project in the Invermere District
- definition of grizzly bear road density targets
- etc.

1. Given the close relationship between the KBLUP Implementation Strategy and the Forest Practices Code, the workplan will ensure the necessary sequencing of FPC implementation actions with the implementation of the KBLUP.
2. The relationship of the priority projects and key supporting actions to multi-year operational planning processes (see section 6.3).

The annual IAMC workplans will be made public prior to the fiscal year in which they are to be delivered. The IAMC is also charged with coordinating the various agency's activities to ensure integrated delivery of the workplan commitments, recognizing that actual delivery of projects will occur through the work of the respective government agencies (see Figure 6.1). Government agencies will provide status reports on their projects thus enabling the IAMC to monitor the on-going status and/or effectiveness of workplan implementation (see section 6.5). A comprehensive progress report will be made public annually (see section 6.6).

6.3 Subsequent Land Use Planning

Strategic Lower Level Planning

The KBLUP and Implementation Strategy provide regional-level strategic guidance for land use. Refinement of the strategic guidance at the local scale will be required and is, in fact, acknowledged in many of the Implementation Strategy management objectives and strategies. A variety of local level strategic land use planning initiatives can be expected, including:

- landscape unit plans (for individual landscape units, or groupings of units) to fulfill FPC implementation requirements and which will address a range of values and issues;
- integrated rangeland planning to deal with grazing and rangeland ecosystem management priorities;
- recreational planning to ensure a range of recreational opportunities continue to exist

and are integrated with resource development activities;
- settlement land use planning pursuant to the *Municipal Act* -- to develop official community plans or regional growth strategies -- will occur under the jurisdiction of municipalities and regional districts, and;
- future local land use planning processes, not presently anticipated, may be proposed and undertaken, at various scales, to respond to area-specific issues, or to captialize on opportunities.

In all cases, the expectation is that these subsequent land use planning initiatives and the resulting products will be guided by, and consistent with, the strategic direction provided by the KBLUP and Implementation Strategy. Indeed, there is a legal requirement for consistency between the provisions of a strategic level, regional land use plan and lower level FPC strategic and operational plans, where the provisions in a strategic regional land use plan have been declared a higher level plan pursuant to the *Forests Practices Code Act of British Columbia*.

The IAMC will be responsible for developing the terms-of-references for subsequent lower level strategic planning processes for Crown land and resources. In doing so, IAMC will specify the requirement that subsequent planning products be consistent with the management direction identified in the KBLUP and Implementation Strategy. The planning process terms-of-reference will also identify the planning methods, mechanisms for public participation and the planning products expected to flow from the process. In exceptional circumstances, a lower level land use planning process, through the acquisition of new information, may require an amendment to the Kootenay/Boundary Regional Land Use Plan or Implementation Strategy. The requirements for such an amendment will be evaluated according to the criteria outlined in section 6.8 below, and, if required, the appropriate amendment to the regional plan or implementation strategy will occur prior to the adoption of the lower level plan.

Multi-Year Operational Planning Processes

For the forestry sector (and resource uses and management which are linked with forest management practices), delivery of the KBLUP Implementation Strategy and the Forest Practices Code must be integrated into the required five-year planning process. Forest licensees are required each year to prepare Forest Development Plans (FDP) that spatially identify proposed harvesting activities for a five year period. The Ministry of Forests issues instructions to the licensees at least four months prior to when the FDPs must be submitted to government for consideration. Such instructions incorporate any new government policy direction. Given that the Implementation Strategy will be delivered over a number of years, it will be necessary to provide operational interpretations of the Implementation Strategy so that clear instructions can be given to the forest licensees. In general, one to three years of future forestry operations are already approved through previous forest devlopment plans and cutting permits. Therefore, there will be a time lag between when aspects of the Implementation Strategy are articulated to the licenses and when such management practices are reflected on-the-ground.

There are two main vehicles for ensuring that the KBLUP, Implementation Strategy and the Forest Practices Code are delivered through the forest development planning process. Firstly, Memorandum of Understandings (MOU) between the affected government agencies have, and may continue to be, used to clarify the guidance and changes which need to be articulated to the licensees. Secondly, the establishment of landscape units, including finalization of boundaries and objectives for the defined areas, must be consistent with the KBLUP Implementation Strategy (as required through the Forest Practices Code). As a result, a confirmation and clarification of the regional level guidance will be expressed at a more local scale through the establishment of landscape unit objectives.

Currently, the MOU is the primary delivery vehicle for the Implementation Strategy and the strategic planning aspects of the FPC as the plan for establishing landscape units is not expected to be complete before the fall of 1997. Over time, landscape units will be established across the region. As this process unfolds, it will replace the need to use MOUs (see Figure 6.2).

The Forest Practices Code also requires that five-year range management plans be undertaken. A staggered schedule is used to review and renew the plans. Therefore, the degree to which the Implementation Strategy is incorporated into the range management plans depends on the timing of the review and the extent to which specific projects under the Implementation Strategy have evolved.

6.4 Public Involvement Opportunities in Subsequent Land Use

Planning

A strong history of public involvment in the Kootenay/Boundary region has provided important experiences to build from in defining continued opporunities for meaningful public involvement. Given the variety of landscapes, issues and cultural differences between communities, a flexible approach to future public involvement will be undertaken in the region. This approach will primarily utilize existing groups and structures within communities rather than impose a formal, consistent approach across the region.

The Kootenay IAMC will provide regional coordination and support for future interactions with the public on the KBLUP and Implementation Strategy. As subsequent planning at lower levels must be consistent with the regional plan, it is important that information exchange and public education on the technical work outlined in the Implementation Strategy is undertaken. This will ensure that both government and the public can effectively identify priorities for further dialogue and public involvement which reflects the capacity limits of all affected parties. As a result, public education on the KBLUP and Implementation Strategy will:

- clarify which decisions have been made through the KBLUP and Implementation Strategy;
- what future work is merely technical implementation of the decisions outlined in the KBLUP and Implementation Strategy and, for the most part, are requirements for landscape unit planning in order to fully implement the FPC (see section 6.3);
- what outstanding decisions must still be addressed at the landscape level which, by their nature, lend themselves to further public involvement. These issues generally are outside of the requirements for landscape unit planning under the FPC. However, such issues may best be addressed at a scale similar to landscape units (a single, or group of, watersheds). Agreements reached on such issues will become part of the overall 'plan' or information base for that landscape unit. However such agreements, unless they relate directly to implementation of the FPC, will not be considered for

definition as landscape unit 'objectives' under the Code.

6.5 Plan Monitoring and Reporting

Monitoring of the Kootenay/Boundary Regional Land Use Plan and Implementation Strategy

will occur at two main levels:

- Implementation Monitoring will assess the extent to which the management strategies have been or are being delivered.
- Effectiveness Monitoring will assess the degree to which the management strategies are effective in successfully achieving the particular objectives which they are intended to promote. This level of monitoring will be based on agencies' ongoing research programs, as well as through assessment of progress towards objectives using pre-defined measurement indicators. The results from this level of monitoring will be used as a primary adaptive management tool, to indicate adjustments in the strategies and other government programs, policies and procedures that may be warranted in order to more effectively realize the stated objectives.

Where monitoring findings reveal the need for regional plan or implementation strategy amendment, the Kootenay IAMC will be responsible for coordinating the appropriate amendments, in accordance with the amendment provisions in section 6.8 below.

6.6 Annual Public Report

The Kootenay IAMC is responsible for oversight and delivery of plan implementation and effectiveness monitoring, and for issuing an annual public report on monitoring results.

The annual monitoring report will include:

- actions taken to conform with plan direction;
- results of the effectiveness monitoring in achieving the management objectives;
- proposed actions to respond to the monitoring results; and,
- an updated workplan (section 6.2).

Following the release of the monitoring report, the Kootenay IAMC will hold two public meetings, one in each of the West and East Kootenays, to review the report and solicit public comment.

6.7 Plan Interpretation and Dispute Resolution

Public or agency concerns regarding how the KBLUP and Implementation Strategy are being interpreted, or how specific practices are occurring, will be addressed in the same spirit that the plan was developed.

The public are invited to express any concerns regarding specific resource management practices, or general interpretation issues related to KBLUP management objectives and strategies, directly to the affected government agencies. Where there is an existing review or appeal process (e.g., the Forest Practices Code), the concern will be dealt with through it. In other cases, the responsible manager will respond to the concern in writing. If the matter is not satisfactorily resolved, the concern will be forwarded to the Kootenay IAMC to determine if the decision is consistent with the approved plan and implementation strategy and define the necessary actions for resolution.

6.8 Plan Amendment

(a) Unscheduled Plan Amendments

A clear goal of the Kootenay/Boundary Regional Land Use Plan is to provide land use stability and certainty, partly by providing strategic direction to lower level planning. However, it is also recognized that adaptive resource management, as a response to uncertainty, may lead to refinements of the regional plan and/or Implementation Strategy, based on research/monitoring results. Similarly, other events may trigger the need to consider an unscheduled amendment. Unscheduled amendments may arise as a result of:

- new information which suggests the need to refine the regional plan and/or Implementation Strategy (e.g., inventory, research, monitoring results),
- the conclusion of a major project proposal review (e.g., Environmental Assessment process decision) which differs from the management direction expressed in the regional plan and/or Implementation Strategy,
- extraordinary circumstances arising from the outcome of a local level planning process
- a significant disturbance to a particular area within the region (e.g., fire, insect/disease outbreak),
- a government decision in the form of a Cabinet directive, or the adoption of new legislation or regulations.

The Kootenay IAMC will be responsible for assessing unscheduled amendment proposals and for determining what action will be taken. If an amendment is required, the Kootenay IAMC will assess whether the issue is substantial or of a minor, non-contentious, housekeeping nature that is more appropriately incorporated into the regional plan and/or Implementation Strategy at the time of the next scheduled amendment. In assessing the need for an unscheduled amendment, the IAMC will apply the following guidelines in determining the significance of the proposed amendments. Amendments will be considered substantial if the change will result in:

- amendment of the planning area boundary to take-in a substantial amount of new land area, or the deletion of substantial land areas from application of the plan.
- significant change to a land use designation that would result in re-designation of approximately 5% or more of a unit's area.
- amendment to a particular objective or strategy that would significantly change the priority given to the use of resources in the area for which the change is proposed.

Substantial amendment proposals will require public consultation and evaluation of the social, economic and environmental implications of the proposed amendment. Commercial/industrial proponents of amendments will normally be responsible for conducting public consultation and evaluation to standards identified by the Kootenay IAMC (or through other appropriate agencies, such as the Environmental Assessment

Office, in the case of a proposed amendment arising from a major development proposal).

Unscheduled substantial amendments will be decided by the three plan approving ministers, as the authorities responsible for plan adoption and substantial amendment decisions. A amendment decision may also require revision to a higher level plan declaration order, under the *Forests Practices Code Act of British Columbia* in effect for the subject area.

(b) Scheduled Plan Amendment

The Kootenay/Boundary Regional Land Use Plan and Implementation Strategy are also subject to a scheduled comprehensive review to commence at the eighth anniversary of the plan and to be completed by the tenth anniversary. The Kootenay IAMC may also consider annually whether or not a comprehensive review is warranted prior to the scheduled plan review.

Comprehensive plan reviews will be conducted in conformance with prevailing provincial land use planning policy direction. The Kootenay IAMC is responsible for establishing the plan review terms-of-reference in accordance with that policy direction, and for incorporating opportunities for public participation in the review process.

Back to Table of Contents

•Top •Copyright •Disclaimer •Privacy •Government of British Columbia

W3C HTML 4.01

• Ministry Home • Government of British Columbia
Kootenay Region
Ministry of Sustainable Resource Management
The Minister | News | Search | Reports & Publications | Home | Contacts

Kootenay/Boundary Land Use Plan

Implementation Strategy

Kootenay Inter-Agency Management Committee

June 1997

Glossary

The following terms are provided to assist in the review of the KBLUP Implementation Strategy. It is recognized that a technical working glossary will be developed and evolve over time as the Implementation Strategy is delivered through operational level decision-making.

Access management plan -- In general usage, a plan that shows how and where, for a particular area, access will be provided or limited. Within the context of Forest Practices Code usage, an access management plan is an operational plan that shows how and where road construction, modification and deactivation will be carried out for areas not covered by forest development plans to protect, or mitigate impacts on known resources or sensitive locations, while maximizing the efficiency of resource development

Adaptive resource management -- An approach to managing uncertainty that emphasizes learning by trial. Management policies and practices are adopted, based on best available information, and are monitored to assess effects. Adaptations to those policies and practices are made periodically, on the basis of monitoring and research information.

Agroforestry -- Management (including harvesting) of non-fibre forest resources such as mushrooms, berries, floral cuttings.

Allowable annual cut (AAC) -- The permitted rate of timber harvest from a specified area of land. The chief forester sets AACs for timber supply areas and tree farm licenses in accordance with Section 7 and/or Section 170 of the Forest Act. The district manager sets AACs for woodlot licenses. May also refer to a portion of the total AAC for the management unit (e.g., TSA) partitioned to a single harvesting agreement (i.e., forest license, timber sale license).

Animal unit month -- The amount of forage required to feed a mature one thousand pound cow with or without unweaned calf at her side, or equivalent (one two-year-old horse or five deer) for one month. Grazing stock rates are often expressed as AUMs per hectare or hectares per AUM. Grazing tenures for ranch operations are issued on the basis of AUMs.

Archaeological assessments -- Assessments based on fieldwork and ethnography research of the location, significance and sensitivity of archaeological resources in a given area. Such assessments may be undertaken at an overview or site level. Archaeological impact assessments are undertaken to identify the potential risk to archeological resources from a specific proposed resource development, and to identify the means to mitigate impacts on those resources.

Backcountry tourism -- Commercial tourism activities that are conducted in relatively remote areas of the region, and which are reliant upon access to, and maintenance of, the region's natural amenities (e.g., scenic viewscapes, wildlife populations, solitude, water quality, etc.)

BC Skills Now -- A provincial program designed to provide British Columbia workers with the skills necessary to successfully secure new employment opportunities.

BC 21 program -- A provincial program to invest in regional and community infrastructure and services.

Biodiversity -- The diversity of plants, animals and other living organisms in all their forms and levels of organization, including genes, species and ecosystems and the evolutionary and functional processes that link them.

Biodiversity emphasis -- Pursuant to the FPC Biodiversity Guidebook, the relative emphasis that is placed on the maintenance of biodiversity for a particular area (normally a landscape unit), mainly through the application of resource management practices to retain old seral vegetation and provide connectivity linkages within and between ecosystems. The FPC Biodiversity Guidebook identifies three biodiversity emphasis levels -- high, intermediate and low -- and assigns recommended management criteria to each level. The KBLUP assigns biodiversity emphasis levels to all Crown lands in the region.

Blue listed species -- Sensitive or vulnerable species, as identified by the Ministry of Environment, Lands and Parks. Blue listed species are considered to be vulnerable and "at risk", but not endangered or threatened. Populations of these species may not be declining but their habitat or other requirements are such that they are sensitive to disturbance. The blue list also includes species that are generally suspected of being vulnerable, but for which information is too limited to allow designation in another category.

Canada / B.C. infrastructure program -- A program established under a federal - provincial agreement to invest in regional and community infrastructure projects such as highways.

Capability (land) -- The natural biological and physical ability of an area of land to support a particular management activity or use. (e.g., soil capability for agriculture; habitat capability for waterfowl). Capability depends upon site conditions such as climate, slope, exposure, landform, soils and geology.

Coarse woody debris -- Sound and rotting logs and stumps that have the potential to provide habitat for fungi, plans, animals and insects and their predators, and that provide a source of nutrients for soil development.

Columbia river downstream benefits -- The funds flowing to the province and the Kootenay region as a result of renegotiation of the 1964 Columbia River Treaty. The funds allocated for investment into the Kootenay region are managed by the Columbia River Trust.

Commission on Resources and Environment (CORE) -- An independent organization created by the British Columbia government whose mandate (as defined in the *Commissioner on Resources and Environment Act*) was to "develop for public and government consideration a British Columbia-wide strategy for land use and related resource and environmental management". CORE sponsored East Kootenay and West Kootenay-Boundary regional planning processes between 1992 and 1994.

Community watershed -- Defined in the *Forest Practices Code of British Columbia Act*, section 41(8) as:

a) the drainage area above the most downstream point of diversion on a stream for a water use that is for human consumption and that is licensed under the *Water Act* for

- a waterworks purpose, or
- a domestic purpose if the license is held by or is subject to the control of a water users' community incorporated under the *Water Act*

if the drainage area is not more than 500 square kilometres and the water license was issued before June 15, 1995 or,

b) an area that is designated as a community watershed under subsection (10).

Sub-section 10 states that the regional manager may designate an area as a community watershed if:

a) in the opinion of the regional manager and a designated environment official it should be designated as a community watershed,

b) the area is all or part of a drainage area above the most downstream point of diversion for a water use that is for human consumption and that is licensed under the *Water Act* for a domestic purpose or a waterworks purpose, and

c) the area is not an area referred to in subsection (8)(a).

Connectivity corridors -- Land and water areas with characteristics that make them suitable for providing biodiversity linkages among late sucessional ecosystems. Maintenance of connectivity corridors is considered important to long term biodiversity health through the provision of opportunities for genetic, species and ecosystem movement over time.

Consensus seeking planning -- Multi-stakeholder planning processes that seek to produce a consensus on land use and natural resource management among the planning participants. A consensus is a general agreement on a package of provisions, even if there is not complete concurrence on each aspect.

Consultation (public) -- Democratic activities undertaken to identify the viewpoints, preferences and priorities of the public with respect to particular issues or initiatives, with a view to integrating the public's suggestions into decisions as a means of making the decisions more informed, sound and stable. Public consultation methods are many, ranging along a continuum of increasing interaction, level of commitment by the parties, cost, time and influence. The consultation mechanisms that are employed in any given situation are normally based on an assessment of the issue-specific circumstances, and an articulation of the particular objectives behind the consultation initiative.

Desired plant community -- A plant community that produces the kind, proportion and amount of vegetation necessary for meeting the land use plan requirements or ecological site objectives. The desired plant community must be consistent with the site's capability to produce the desired vegetation through management, land treatment or a combination of the two.

Domestic watersheds -- Watersheds which are licensed for human consumption but not designated as "community watersheds" -- see above.

Ecosystem -- A functional unit consisting of all the living organisms in a given area, and all the non-living physical and chemical factors of their environment, linked together through nutrient cycling and energy flow. An ecosystem can be of any size -- a log, pond, field, forest or the earth's biosphere -- but it always functions as a whole unit. Ecosystems are commonly described according to the major type of vegetation, for example, forest ecosystem or grassland ecosystem.

Ecosystem-based management -- An approach to land and resource planning and management that emphasizes the recognition and maintenance of ecosystem function and structure.

Enhanced resource development zone -- ERDZ (Coal) -- a land use designation category encompassing areas of known coal reserves and existing coal mining and related activities. The Coal ERDZ signifies an assurance of long-term access to the subject lands for coal mining, exploration and development, contributing to investor confidence and general coal industry viability in the region.

Enhanced resource development zone -- ERDZ (Timber) -- a land use designation category encompassing lands with suitability for timber management activities, and upon which relatively intensive timber management investments and practices are appropriate.

Environmental assessment -- A process, initiated under authority of the provincial *Environmental Assessment Act*, to identify and evaluate the environmental (and typically also the social and economic) effects of a proposed development (e.g., mineral, energy, industrial or commercial development) and to identify ways to mitigate potentially negative effects of the development, as a basis for a government decision on whether or not and how the proposed development should proceed..

Environmental supply review -- a periodic assessment of the quantity, distribution and overall health of the region's environmental resources, with a view to adaptively using the assessment information to amend land use plans and resource management policies and procedures, in pursuit of the overall goal to conserve the health of the region's ecosystems.

Forest ecosystem network (FEN) -- An area of land or water that serves to maintain or restore the natural connectivity within the components of an ecosystem, and between ecosystems.

Forest land reserve -- Land designated under the *Forest Land Reserve Act*. This includes private land within a tree farm license and private land classed as managed forest land under the *Assessment Act*, as well as designated Crown land in the provincial forest. Removal of land from the reserve is restricted, as is the use and subdivision of the land. The purpose of the reserve is to maintain the commercial working forest of British Columbia.

Forest practices code (FPC) -- The legislation (including the *Forest Practices Code of British Columbia Act* and associated regulations), standards, and guidebooks that govern forest practices in British Columbia. Forest practices include timber harvesting, road construction/maintenance/use/deactivation, silviculture treatments, botanical forest product collecting, grazing, hay cutting, fire use/control/suppression, etc.

Forest Renewal B.C. -- A crown corporation that is responsible for managing the provincial Forest Renewal Plan investments. The Forest Renewal Plan is a long-term plan for investment in BC's forests, designed to enhance the productive capacity and value of forest lands and resources, create jobs, provide training for forest workers and strengthen forest dependent communities.

Frontcountry tourism -- Commercial tourism products that are offered in communities and along main travel corridors, such as golfing, accommodation and campgrounds.

Guidebooks -- One of the four main components of the Forest Practices Code (The others are the *Forest Practices Code of British Columbia Act*, the regulations and the standards). The guidebooks support the legislation, regulations and standards but are not part of the legislation. These "how-to" guides detail the Code's recommended procedures, processes and results. They give information on how to make site-specific interpretations and modifications to the requirements identified by the Code. The guides become legally enforceable when the specifications and procedures recommended by the guidebooks are incorporated into plans, prescriptions and tenure contracts.

Guideline -- A preferred or advisable course of action respecting land and resource management. Guidelines imply a degree of flexibility, based on administrative judgment or feasibility to apply the guideline and are consequently not normally enforceable through legal means. (The KBLUP identifies a series of resource management guidelines which, when used in combination with resource value maps, provide geographically specific management direction for individual resource values).

Grazing enhancement fund -- An allocation of provincial funds dedicated to enhanced development and management of grazing resources.

Higher level plan -- As defined under the *Forest Practices Code of British Columbia Act*,

a) a plan formulated pursuant to section 4(c) of the *Ministry of Forests Act* and designated as a higher level plan by the district manager in accordance with direction from the chief forester,

b) a management plan designated as a higher level plan by the chief forester for tree farm licenses and by the regional manager for other agreements under the *Forest Act*,

c) an objective for a resource management zone,

d) an objective for a landscape unit or sensitive area,

e) an objective for a recreation site, recreation trail or interpretive forest site, and

f) a plan or agreement declared to be a higher level plan by:

- the ministers, or
- the Lieutenant Governor in Council under this or any other Act.

Higher level plans supply guidance and direction for operational plans. Operational plans are required to be consistent with higher level plans that are in effect for the geographic area covered by the operational plan.

Identified wildlife -- Defined in the *Forest Practices Code of British Columbia Act*, Operational Planning Regulation, as those species at risk that the Deputy Minister of Environment, Lands and Parks, or a person authorized by that deputy minister, and the chief forester, agree will be managed through a higher level plan, wildlife habitat area, or general wildlife measure.

Ingrowth -- Vegetative growth occurring in grassland ecosystems (natural disturbance type 4) due to human suppression of naturally occurring fires.

Integrated resource management -- A holistic resource management philosophy and approach where the underlying intent is to share and coordinate among a broad range of values and interests when conceiving, designing and implementing land and resource policies, programs, plans or projects.

Integrated resource management zone (IRMZ) -- a land use designation category within which the primary objective is to balance and optimize environmental, economic and social benefits from the resource values within the zone.

Key alpine habitats -- Whitebark and Limber pine stands, sub-alpine riparian shrublands, alpine meadow complexes and grassland ecotones, avalanche tracks, watershed headwater areas and basin ecosystems and other high elevation ecosystems commonly associated with the following principle environmental characteristics:

- short lapse rate (impact on the length and warmth of the growing season, phenological window)
- low temperature
- high radiation receipts
- azonal soils
- high gradients.

Kootenay Inter-Agency Management Committee (IAMC) -- The interagency committee of senior land and resource management officials in the Kootenay region. The committee is responsible for integrating and coordinating all land and resource planning and protected areas work in the region and for setting regional planning priorities.

Kootenay regional advisory group (KRAG) -- A multi-stakeholder committee with a mandate to provide advice to the provincial government on regional and community economic development and transition in the Kootenay region.

Resource Management Division (RMD) -- The provincial government office established to coordinate the administration of inter-agency land use planning, advise government on land use policy, and to coordinate the management of land and natural resource inventory programs for the province.

Landscape level planning -- Planning that's purpose is to develop resource management objectives and strategies for resource management in a particular landscape unit or a grouping of landscape units.

Landscape unit -- A planning area established under the *Forest Practices Code of British Columbia Act* by the district manager, up to 100,000 hectares in size, based on topographic or geographic features such as a watershed or a grouping of watersheds.

Land use designation category -- A category of land use employed in a land use plan to describe and communicate an indented land or resource use direction for the lands covered by the designation category. Land use designations in strategic land use planning may indicate a priority or dominant land use, as well as subdominant uses.

Lower level plan -- In the hierarchy / continuum of land use planning levels, ranging from regional to site planning, a lower level plan is a plan that focuses on greater management detail than the plan "above it", from which it receives guidance and management direction.

Management direction statement -- A summary statement indicating interim management direction for a protected area, pending the eventual development of a park master plan.

Mine reclamation -- the rehabilitation of the land to a condition equal to or better than existed before mining, on a property-wide basis. It is based on the premise that mining is a short-term use of the land.

Mitigating strategies -- In the context of land/resource management, those actions or practices aimed at improving compatibility between land uses. Mitigating strategies include efforts to avoid, minimize, rectify, reduce or compensate for the impact of one land use on another. In the context of socio-economic impact mitigation, those actions and initiatives, taken over the short, medium and long tern, to reduce or minimize impacts and disruptions to communities and residents that are potentially associated with sudden change to the economic base of those communities.

Natural environment setting -- A classification level in the recreation opportunity classification scheme, within which the management intent is to minimize the roaded character of the area. These areas are small and may have roads into the area, but not through the area. Landscape alterations are minimal. These areas provide a reasonable degree of isolation from the sights and sounds of motorized activity in a naturally appearing setting.

Natural disturbance types -- A term used in the FPC biodiversity guidebook to characterize areas with different natural disturbance regimes. Five natural disturbance types are recognized as occurring in B.C.:

NDT1 - Ecosystems with rare stand-initiating events

NDT2 - Ecosystems with infrequent stand-initiating events

NDT3 - Ecosystems with frequent stand-initiating events

NDT4 - Ecosystems with frequent stand-maintaining fires

NDT5 - Alpine tundra and sub-alpine parkland ecosystems.

Official community plan -- A land use plan that is developed and approved for a municipality or regional district according to the requirements of the *Municipal Act.*

Objective -- A statement of a desired condition respecting lands, resources or communities in a planning area. Objectives may be described broadly which apply across an entire region, or for particular geographic areas.

Old growth management area -- Defined in the *Forest Practices Code of British Columbia Act,* Operational Planning Regulation, as an area established under a higher level plan which contains or is managed to contain structural old growth attributes (such as maintenance of large trees, variation in tree size/spacing, accumulation of large dead standing and fallen trees, multiple canopy levels, elements of decay, etc.)

Operability line -- The line (usually an elevation) beyond which timber harvesting becomes uneconomic and/or technically unfeasible due to hauling distance, steep slopes, soil instability, timber quality, environmental concerns, etc. Operability can change over time as a function of changing harvesting technologies and economics.

Operational plan -- A resource management plan that contains detail on the logistics for resource use / development in a particular area. Methods, schedules and responsibilities for accessing, harvesting, renewing and protecting resources are set out to enable site-specific operations to proceed. As described in the *Forest Practices Code of British Columbia Act*, operational plans include forest development plans, logging plans, access management plans, range use plans, silviculture prescriptions, stand management prescriptions and five year silviculture plans.

Park master plan -- A comprehensive plan that describes the future management direction for a protected area.

Patch size -- A stand of similar-aged forest that differs in age from adjacent patches by more than 20 years. When using the term patch in designing landscape patterns, it refers to the size of either natural disturbance openings which led to even-aged forests, or those openings created by cutblocks.

Polygon -- A unit of land depicted on a map that contains an area of similar characteristics.

Potential natural community -- The biotic community that would become established on a site if all successional sequences were completed under present environmental conditions without interference by humans.

Protected area -- A designation for areas of land and water set aside to protect natural heritage, cultural heritage or recreational values (may include national park, provincial park or ecological reserve designation).

Protected area strategy (PAS) -- The provincial strategy to develop and expand British Columbia's protected area system to encompass 12% of the provincial land base by the year 2000.

Provincially significant -- An interpretive rating, in a rating hierarchy, applied to a particular resource values to indicate their relative uniqueness or scarcity. Provincially significant values are unique and important within a provincial context, given their rarity or scarcity, or the economic, social or environmental contribution that they make to the province (as compared to regionally or locally significant resource values). Strategic land use planning is normally limited to the consideration of provincially or regionally significant resource values.

Rangeland ecosystems -- Natural grasslands, open forests, seral shrub grassland, alpine grassland, seeded rangeland and early seral cutblocks.

Rangeland management regimes -- includes activities to manipulate the levels of range utilization, timing and duration of grazing, distribution and stocking rates. Management regimes may apply to both livestock and, to a lesser degree, wildlife species. In the case of livestock, management techniques include the implementation of modification of grrazing systems, the construction of livestock management facilities such as fences, gates, cattleguards and stock trails, proper salt placement, development of stockwater facilities, and range riding.

Rare, threatened or endangered species -- see "blue-listed" and "red-listed" species.

Recreation opportunity spectrum (ROS) -- A recreational classification system that is used to classify areas in terms of the type of recreational experience that a recreation user would have in that area, based on an assessment of the area's remoteness, size, evidence of humans, social setting, and setting characterization. The six ROS classes are natural, primitive, semi-primitive non-motorized, semi-primitive motorized, roaded resource land and rural.

Red listed species -- Threatened or endanger species identified by the Ministry of Lands, Parks and Housing. Plants or animals named on the red list are either extirpated, endangered or threatened, or are being considered for such status. Any indigenous species or sub-species threatened with imminent extinction or extirpation throughout all or a significant portion of its range in B.C. is endangered. Threatened indigenous species or sub-species are those that are likely to become endangered in B.C. if conditions are not altered.

Regional biodiversity benchmark -- A statement of the desired condition and desired spatial extent, in the Kootenay region, of regionally significant fish streams, caribou species and habitats, ungulate winter range, representative ecosystems and regional connectivity and grizzly bears - as primary indicators of regional biodiversity health. The benchmark will be used to monitor overall regional biodiversity levels in the region over time.

Regional growth strategy -- A strategic plan related to human settlement, initiated under authority of the provincial *Growth Strategies Act*, for a regional district or group of regional districts, to identify a regional vision that commits affected municipalities and regional districts to a course of action to meet common social, economic and environmental objectives. A regional growth strategy must cover a period of at least 20 years and it must include population and employment projections and actions to meet the needs of future residents in relation to housing, transportation, services, parks/natural areas and economic development.

Regional objectives and strategies -- Statements of land use and natural resource management intent (objectives), and the means of attaining that intent (strategies), that apply to resource values and sectors throughout the entire region.

Regionally significant -- An interpretive rating, in a rating hierarchy, that is applied to particular resource values to indicate their relative uniqueness or scarcity. Regionally significant values are unique and important within a regional context, given their rarity or scarcity, or the economic, social or environmental contribution that they make to the region (as compared to provincially or locally significant resource values). Strategic land use planning is normally limited to the consideration of provincially or regionally significant values.

Resource management guidelines -- The statements contained in Appendix 2 of the KBLUP that describe the specific resource management practices, standards and procedures that apply within the planning area.

Revelstoke Minister's Advisory Committee -- A multi-sectoral group comprised of representatives from the Revelstoke area with a direct interest in land use and natural resources management. This committee was appointed by the Minister of Forests in 1995 to advise on the development of resource management and socio-economic objectives and strategies for the Revelstoke TSA.

Riparian reserve -- A geographic zone defined in the *Forest Practices Code of British Columbia Act*, Operational Planning Regulation, as that portion, if any, of the riparian management area or lakeshore management area located adjacent to a stream, wetland or lake of a width determined in accordance with Part 10 of the Regulation.

Roaded resource lands -- A classification level in the recreation opportunity classification scheme, within which the management intent is to provide opportunities for dispersed and facility oriented recreation. These lands are accessed by better than primitive roads and are suitable for most conventional 2 wheel drive vehicles. These lands have been altered by man and the alterations are visible on the landscape.

Semi-primitive motorized recreation -- A classification level in the recreation opportunity classification scheme, within which the management intent is to provide for dispersed motorized recreation. These areas are accessed by primitive roads or trails, suitable for high clearance 4 wheel drive vehicles, motorcycles, ATVs and snowmobiles.

Semi-primitive non-motorized recreation -- A classification level in the recreation opportunity classification scheme, within which the management intent is to maintain the unroaded character of the area and to provide opportunities for dispersed non-motorized recreation.

Sensitive Areas -- Small areas established under the *Forest Practices Code of British Columbia Act* by MOF district managers to manage or conserve unique or locally significant resource values.

Settlement land uses -- Land uses authorized under authority of the *Land Act*, including, but not limited to, land used for the following purposes: residential, institutional/community, small parcel intensive agriculture, industrial, quarries, commercial, communications facilities, utilities, community park facilities and extension to existing private land holdings. Settlement uses are predominantly located within and/or adjacent to existing municipal boundaries; in areas outside of municipal boundaries that adjoin or are proximate to the existing mosaic of private land; in areas within linear settlement corridors that reflect the past pattern of land settlement and development; or in resort development areas that are focused primarily on tourism and supporting accommodation and infrastructure facilities.

Scenic areas -- Defined in the *Forest Practices Code of British Columbia Act*, Operational Planning Regulation, as any visually sensitive area or scenic landscape identified through a visual landscape inventory or planning process carried out or approved by the district manager.

Shared decision-making -- An approach to public participation in decision-making (especially land use planning) in which, on a certain set of issues for a defined period of time, those with authority to make a decision and those affected by that decision are empowered jointly to seek an outcome that accommodates the interests of all concerned.

Silviculture system -- A planned program of treatments throughout the life of the stand to achieve stand structural objectives based in integrated resource management goals. A silvicultural system includes harvesting, regeneration and stand-tending methods, covering the entire length of a rotation or cutting cycle.

Small business bid proposal -- A program through which the Ministry of Forests sells Crown timber competitively, on the basis of solicited bids, to individuals and corporations registered in the program. Proposals may be evaluated in terms of stumpage bid, as well as other criteria including employment creation.

Special resource management zone (SMRZ) -- the land use designation category applied to areas with high concentrations of regionally significant and sensitive resource values, including critical fish and wildlife habitat, under-represented ecosystems, important viewscapes, sensitive recreation areas and cultural heritage features. Areas designated as SRMZ communicate the general resource management priority to maintain the integrity of the numerous special and sensitive values that are known to exist in those areas.

Strategic land use plan -- The product of a land use planning process at the regional, sub-regional and, in some cases, at the local level, which provides land and resource allocation and management direction. Strategic land use plans involve the identification of resource management zones, objectives and strategies. They provide direction and guidance to field level policy and program development, in day-to-day administrative decision-making, and to future lower-level planning processes.

Strategy -- A means of achieving an objective. Strategies may be general or specific in nature, and may describe a resource management standard, guideline, policy or procedure.

Sub-unit -- A geographic area within a land use designation zone for which specific land and resource management direction is provided. The Kootenay region was subdivided into ?? separate sub-units, as a basis for describing geographically-specific land and resource management direction.

Suitability (land) -- The degree to which a particular use or activity is considered appropriate on a given area of land, as interpreted from an assessment of a variety of factors, including biophysical capability of the land and socio-economic considerations.

Support zones -- areas adjacent to protected areas, parks, wildlife habitat areas, sensitive areas or critical habitats which buffer a marked change in resource management emphasis enabling a gradual impact to environmental values. This is accomplished with strategic biodiversity emphasis allocation, guideline application by environmental value, access management, or connectivity management through the Higher Level Plans Policy and Procedures document.

Target -- The quantification of a land use / resource management objective. A target might apply to the entire region (e.g., a regional short term timber availability target), or it might pertain to a particular geographic area (e.g., proportion of a sub-unit to be managed at 'high emphasis biodiversity' level). Resource management targets indicate a desirable or plausible resource production output, allocation amount, or a timeline within which an action is intended to be initiated or completed. Resource management targets provide directive guidance to resource managers in plan interpretation and implementation, but are *not* binding on the authority of statutory decision-makers to exercise their discretion in making resource management and administrative decisions for which they are legally responsible.

Total resource plan -- An integrated resource management plan for an individual watershed or landscape unit that specifies the 'total' long-term development sequence / regime for that watershed or unit.

Tree farm license (TFL) -- An agreement entered into under Part 3, Division 5 of the Forest Act which grants the rights to harvest timber. A TFL has a term of 25 years and requires a management plan providing for the establishment, management and harvesting of timber in a described area (Crown and private land) on a sustained or perpetual yield basis.

Timber supply area (TSA) -- An integrated resource management unit established in accordance with Section 6 of the *Forest Act*. TSAs were originally defined by an established pattern of wood flow from management units to the primary timber-using industries. They are the primary unit for allocable annual cut determination. There are seven TSAs in the Kootenay region.

Utilization standards -- Standards that are prescribed by the Ministry of Forests respecting the size and quality of trees that must be removed from a logging site, and conversely those trees or portions of trees that may be left behind due to marginal small size or-soundness of the wood.

Value-added -- The creation of additional value / income to a resource or product through the further processing, refinement or manufacturing of that resource or product.

Viability -- A statistically or qualitatively generated measure describing a population's persistence or probability to avoid local extirpation as a deterministic environmental variation, and catastrophic genetic drift. Viability is evaluated using three key factors:

- effect of various chance events on population persistence
- time frame used in population planning
- degree of security sought for the population being conserved.

Natural limits to population viability are:

- demographic uncertainty (random events in the survival and reproduction in individuals)
- environmental uncertainty due to random changes in weather, food supply, competitors, predators, parasites, etc.
- natural catastrophes such as floods, fires, droughts
- genetic uncertainty due to random changes in genetic make-up due to founder effect, drift, inbreeding.

Wildlife habitat area -- Defined in the *Forest Practices Code of British Columbia Act*, Operational Planning Regulation, as a mapped area of land that the Deputy Minister of Environment, Lands and Parks, or a person authorized by that deputy minister, and the chief forester, have determined is necessary to meet the habitat requirements of one or more species of identified wildlife.

Wildlife tree -- Defined in the *Forest Practices Code of British Columbia Act*, Operational Planning Regulation, as a tree or group of trees that are identified in an operational plan to provide present or future wildlife habitat. A wildlife tree is a standing live or dead tree with special characteristics that provide valuable habitat for the conservation or enhancement of wildlife (e.g., large diameter and height, current use by wildlife, declining or dead condition, value as a species, or valuable location and relative scarcity).

Woodlot license -- An agreement entered into under Section 41 of the *Forest Act* which grants the rights to harvest timber on a small parcel of Crown and private land (less than 400 hectares on the Coast or 600 hectares in the Interior).

Back to Table of Contents

•Top •Copyright •Disclaimer •Privacy •Government of British Columbia

• Ministry Home
• Government of British Columbia
Kootenay Region
Ministry of Sustainable Resource Management
The Minister
News
Search
Reports & Publications
Home
Contacts

Kootenay/Boundary Land Use Plan

Implementation Strategy

Kootenay Inter-Agency Management Committee

June 1997

Appendix 1

Land and Resource Management Direction within the Arrow Forest District

June 1997

CONTENTS

Section

1. Purpose
2. Organization
3. Resource Management Zone Objectives & Strategies

Appendices

A Community Watersheds

B Protected Areas

C Wildlife Management Area

D Rationale for Biodiversity Emphasis Options

1.0 Purpose

This appendix identifies geographically specific land and resource management objectives and strategies for the ArrowForest District. This site specific management direction covers issues which are:

- not explicitly dealt with through the regional management objectives and strategies (Chapter 2) or the resource management guidelines and accompanying maps (Chapter 3) because they are of local significance, or:
- local interpretations which assist the implementation of the regional management objectives and strategies (Chapter 2) or the resource management guidelines and accompanying maps (Chapter 3).

2.0 Organization

The material in this appendix is organized and presented according to the KBLUP's land use designation categories. Each of the Resource Management Zones is identified by a reference number. For example, the Resource Management Zones identified as A-S01 indicates that the Resource Management Zone is in the Arrow Forest District (A), is within the special resource management area designation category (S), and is tagged with the identifier number 01.

The site specific management objectives and strategies included in this appendix are listed under headings which correspond to those used in the regional objectives and strategies (Chapter 2). These site specific management objectives and strategies are also tagged to specific landscape units. the Forest Practices Code requires definition of landscape units, including boundaries and management objectives. A landscape unit is a geographic area of land which encompasses a single, or group of, watersheds. Recommended landscape unit boundaries for the Kootenay/Boundary region are identified through section 3.2 of Chapter 3. These areas are generally subunits of Resource Management zones and, in some cases, exist in more than one Zone. The appropriate landscape units are identified in this appendix to assist in translating the management direction into landscape level planning. For further discussion on landscape level planning, please see Chapter 6, section 6.3.

Note: Changes, additions or deletions to the resource objectives and strategies outlined in this Appendix may result from further work at either the regional and/or landscape level. Such changes will be undertaken in a manner consistent with the mechanism for Plan Amendment (Chapter 6, section 6.8) or through subsequent landscape level planning (Chapter 6, section 6.3).

3.0 Resource Management Zone Objectives and Strategies

South Salmo River, Lost Creek
A-S01

Objective	Strategy	Landscape Units

General Biodiversity

1.	Maintain the regional connectivity corridor between the US border and north to Kokanee Park to	1.1	Apply the connectivity guidelines within the

	contribute to ecosystem representation and to serve as habitat linkage for the seasonal migration of grizzly bear and caribou, and to support Kokanee Park.		regional connectivity corridor as indicated in Chapter 3, section 3.3.

Ungulates

1.	Maintain the abundance of mule deer, white-tailed deer and Bighorn Sheep within the sustainable carrying capacity of their habitat.	1.1	Complete the Wilson/Stagleap Biophysical mapping project funded by the CBFWCP on the south slopes above the South Salmo River, in the vicinity of Wilson and Stagleap Creeks. Develop a long term habitat enhancement plan for the area.
		1.2	Maintain summer habitat in the upper reaches of Lost Creek, Sheep Creek, Stagleap Creek, and the south Salmo River, through application of the biodiversity emphasis under the FPC.
		1.3	Support the ongoing long term white-tailed deer monitoring project in the Pend d'Oreille Valley, Fort Sheppard and South Salmo areas.

Fisheries

1.	Maintain wild fish stocks and habitat for Bull Trout.	1.1	In establishing priorities for watershed assessments, consideration should be given to the Salmo River and tributaries.
		1.2	In establishing priorities for managing Bull Trout through application of the appropriate components of the FPC, consideration should be given to the Salmo River and tributaries.

Faith and Peter Creeks
A-S02

Objective	Strategy	Landscape Units

General Biodiversity

1.	Maintain the regional connectivity corridor from Arrow Lakes drainage into the Burrell and Grandby systems to contribute to ecosystem representation (ICHdw), to serve as habitat linkage for the seasonal migration of grizzly, and to support Gladstone Park.	1.1	Apply the connectivity guidelines within the regional connectivity corridor as indicated in Chapter 3, section 3.3.

Recreation

1.	Maintain a range of backcountry recreation settings.	1.1	Manage Dog Creek Falls for a semi primitive recreation experience.	A-13

Ungulates

1.	Maintain the abundance of mule and white-tailed deer within the carrying capacity of their habitat.	1.1	Maintain the priority summer habitat within this unit through application of the biodiversity emphasis under the FPC.

Fisheries

1.	Maintain wild fish stocks and habitat for Kokanee, Rainbow and Bull Trout.	1.1	In establishing priorities for watershed assessments, consideration should be given to the Renata and Dog Creek areas.
		1.2	In establishing priorities for managing Bull Trout through application of the appropriate components of the FPC, consideration should be given to the Renata and Dog Creek areas.

Hutchison
A-S03

Objective	Strategy	Landscape Units

Recreation

1.	Maintain a range of recreation opportunities from semi primitive non motorized to roaded resource land.	1.1	Develop and maintain additional campsites on Arrow Lakes as demand increases.	A-15

General Biodiversity

1.	Maintain the regional connectivity corridor for the north-south connection within the Arrow Lake system to contribute to ecosystem representation (ICHdw) and to serve as habitat linkage for the seasonal migration of grizzly bear.	1.1	Apply the connectivity guidelines within the regional connectivity corridor as indicated in Chapter 3, section 3.3.

Ungulates

1.	Maintain the abundance of mule deer and white-tailed deer within the carrying capacity of their habitat.	1.2	Maintain the priority summer habitat within this unit through application of the biodiversity emphasis under the FPC.

Fisheries

1.	Rebuild wild fish stocks and habitats for Rainbow Trout, Bull Trout and Kokanee in Arrow Lakes.	1.1	Collect biological and limnological data to define the extent of the Kokanee decline.
		1.2	Maintain high operating standards at the Hill Creek facility.
		1.3	Monitor and assess the data collection program on the fishery to ensure the necessary information will be gained to evaluate stock status.

Slocan Valley
A-S04

Objective	Strategy	Landscape Units

Wildcraft

1.	Provide opportunities for the extraction of wildcraft resources.	1.1	Opportunities for consultation with the wildcraft sector will occur during the Forest Development Plan process.

Recreation

1.	Maintain a range of recreation opportunities from semi primitive non motorized to roaded resource land.	1.2	Manage alpine and subalpine portions of Dennis Creek basin for semi primitive non motorized recreation.	A-26
2.	Maintain the integrity of the Wragge Beach area.	2.1	Manage Wragge Beach as a roaded resource land campsite.	A-25

General Biodiversity

1.	Maintain the regional connectivity corridor from Kokanee Park to Valhalla Park, through Lemon Creek, and Kokanee Park to White Grizzly Park through Kane Creek, to contribute to ecosystem representation (ICHmw2), to serve as habitat linkage for the seasonal migration of grizzly bear, and to support Valhalla Park.	1.1	Apply the connectivity guidelines within the regional connectivity corridor as indicated in Chapter 3, section 3.3.
2.	Retain attributes for old growth dependent species and fur bearers.	2.1	In establishing priorities for Old Growth Management Areas, consideration should be given to Cedar and Hemlock in the Kane Creek area.
		2.2	Complete the third year of the Enhancement Area Identification Project funded by the CBFWCP to identify enhancement opportunities that will consider the needs of all species.

Ungulates

1.	Maintain the abundance of mule deer, white-tailed deer and mountain goats within the carrying capacity of their habitat.	1.2	Maintain the priority summer habitat within this unit through application of the biodiversity emphasis under the FPC.

Wide Ranging Carnivores

1.	Maintain sufficient seasonal habitat to retain the existing grizzly populations.	1.1	Complete the Grizzly Bear Inventory Project in the area north and east of the Valhalla Park.

Fisheries

1.	Maintain wild fish stocks and habitat for Rainbow, Bull Trout, Mountain Whitefish and Kokanee.	1.1	In establishing priorities for watershed assessments, consideration should be given to the Slocan and Little Slocan Rivers, Koch, Wilson, Silverton, Carpenter, and Bonanza Creeks.
		1.2	In establishing priorities for managing Bull Trout through application of the appropriate components of

			the FPC, consideration should be given to the Slocan and Little Slocan Rivers, Koch, Wilson, Silverton, Carpenter, and Bonanza Creeks.
2.	Maintain stocked fish populations and habitat for Rainbow Trout in Summit Lake.	**2.1**	Collect creel census information to document use, catch, harvest and angler preferences.
		2.2	Review stocking rates, frequency and size of stocked fish.
		2.3	Focus enforcement attention during the spring when the special regulations are in place.
3.	Maintain wild fish stocks and habitats for existing species in Slocan Lake.	**3.1**	Undertake an inventory and assessment of fish stocks and habitats.
		3.2	Document the recreational fishery.
		3.3	Review the present management strategies and implement required changes.
4.	Rebuild wild fish stocks and habitats for Rainbow Trout in the Slocan River.	**4.1**	Assess population and habitat status and develop a restoration plan.
		4.2	Review current management strategies within the context of a restoration plan.
		4.3	Review water licenses within the system in order to identify potential recovery of water for fish.
		4.4	Ensure remaining habitat is conserved and further degradation does not occur.

Headwaters of Eagle Creek
A-S05

Objective	Strategy	Landscape Units

General Biodiversity

1.	Maintain the regional connectivity corridor between Granby Park and north into the Arrow Lake system, to contribute to ecosystem representation, to serve as habitat linkage for the seasonal migration of grizzly bear, and to support Granby Park.	**1.1**	Apply the connectivity guidelines within the regional connectivity corridor as indicated in Chapter 3, section 3.3.

Ungulates

1.	Maintain the abundance of mule deer within the sustainable carrying capacity of their habitat.	**1.1**	Maintain summer alpine habitat and minimize displacement of ungulates by regulating access in the upper Eagle Creek.
		1.2	Maintain the priority summer habitat and important rutting areas in the autumn within this

			unit through application of the biodiversity emphasis under the FPC.
		1.3	Complete the Mule Deer Inventory Project within the Inonoaklin Valley and adjacent sites.

Fisheries

1.	Maintain wild fish stocks and habitat for Kokanee, Rainbow Trout, and Eastern Brook Trout.	1.1	In establishing priorities for watershed assessments, consideration should be given to the headwaters of Eagle Creek.

Headwaters Cortiana and Galloping Creeks

A-S06

Objective	Strategy	Landscape Units

General Biodiversity

1.	Maintain the regional connectivity corridor between Granby Park and north into the Arrow Lake system, to contribute to ecosystem representation and to serve as habitat linkage for seasonal migration of grizzly bear, and to support Granby Park.	1.1	Apply the connectivity guidelines within the regional connectivity corridor as indicated in Chapter 3, section 3.3.

Ungulates

1.	Maintain the abundance of mule deer within the sustainable carrying capacity of their habitat.	1.1	Maintain summer alpine habitat and minimize displacement of ungulates by regulating access in the upper Eagle Creek.
		1.2	Maintain the priority summer habitat and important rutting areas within this unit through application of the biodiversity emphasis under the FPC.
		1.3	Complete the Mule Deer Inventory Project within the Inonoaklin Valley and adjacent sites.

Fisheries

1.	Maintain wild fish stocks and habitat for Kokanee, Rainbow Trout and Eastern Brook Trout.	1.1	In establishing priorities for watershed assessments, consideration should be given to the headwaters of Eagle Creek.

The Pinnacles

A-S07

Objective	Strategy	Landscape Units

Recreation

1.	Maintain a range of recreation opportunities towards the semi primitive end of the Recreation	1.1	Implement a planning process involving Okanagan Provincial Government agencies to define and	A-28

	Opportunity Spectrum.		manage recreation uses.	A-22

General Biodiversity

1.	Maintain the regional connectivity corridor from the Arrow Lake system into the Okanagan Lake system, to contribute to ecosystem representation and to serve as habitat linkage for seasonal migration, gene pool exchange and population dispersal.	1.1	Apply the connectivity guidelines within the regional connectivity corridor as indicated in Chapter 3, section 3.3.

Ungulates

1.	Maintain the abundance of mule deer and mountain goats within the sustainable carrying capacity of their habitat.	1.1	Maintain the priority summer habitat within this unit through application of the biodiversity emphasis under the FPC.
		1.2	Complete the Moose Inventory Project in the Mosquito Creek area.

Fisheries

1.	Maintain wild fish stocks and habitat for Rainbow, Kokanee and Bull Trout.	1.1	In establishing priorities for watershed assessments, consideration should be given to Barnes and Whatshan Creeks.
		1.2	In establishing priorities for managing Bull Trout through application of the appropriate components of the FPC, consideration should be given to the Whatshan Creek area.

Bear Lake
A-S08

Objective	Strategy	Landscape Units

General Biodiversity

1.	Maintain the regional connectivity corridor from the Arrow Lake system into the Okanagon, to contribute to ecosystem representation, to serve as habitat linkage for the seasonal migration of caribou, and to support the Monashee Park.	1.1	Apply the connectivity guidelines within the regional connectivity corridor as indicated in Chapter 3, section 3.3.

Lardeau Range
A-S09

Objective	Strategy	Landscape Units

Recreation

1.	Maintain a range of recreation opportunities from semi primitive non motorized to roaded resource land.	1.1	Manage the Silvercup Ridge for a semi primitive recreation experience. Motorized restrictions and/or road deactivation may be required. Maintain existing trail system.	A-30
		1.2	Maintain semi-primitive recreation opportunities for the shoreline of Trout Lake. Develop boat in/walk in campsites as required. Manage Asher	A-30

			Creek delta for a roaded resource land recreation experience..

General Biodiversity

1.	Retain forest and grassland ecological elements and processes, including species richness, distribution and diversity ranging from a low to moderate risk.	**1.1**	No cattle or sheep grazing tenures to be issued in alpine grasslands within the unit.
2.	Maintain the regional connectivity corridor from the White Grizzly Park north into Revelstoke, and from the White Grizzly Park down Bemner Creek into the Valhalla's, to contribute to ecosystem representation, to serve as habitat linkage for seasonal migration of caribou and grizzly, and to support Goat Range Park.	**2.1**	Apply the connectivity guidelines within the regional connectivity corridor as indicated in Chapter 3, section 3.3.

Ungulates

1.	Maintain the abundance of mule deer, white-tailed deer and mountain goats within the carrying capacity of their habitat.	**1.1**	Maintain summer habitat in the Fitzstubbs, St. Leon Creeks and Trout Lake areas, as well as winter range habitat for mountain goats through application of the biodiversity emphasis options under the FPC.

Mountain Caribou

1.	Ensure that existing Mountain Caribou populations have sufficient seasonal habitat throughout the unit .	**1.1**	Define the Hamling Lakes Wildlife Management Area (WMA) boundaries as indicated on Map 2 in Appendix C.
		1.2	Develop and implement a comprehensive WMA plan.
		1.3	Complete the Central Columbia Mountain Caribou Habitat and Inventory Project.

Wide Ranging Carnivores

1.	Maintain sufficient seasonal habitat to retain the existing grizzly populations.	**1.1**	Minimize length of use in the Lardeau Creek drainage.
		1.2	Complete the Grizzly Bear Inventory Project ongoing within this unit.

Fisheries

1.	Maintain wild fish stocks and habitat for Kokanee, Rainbow, Bull Trout and Whitefish.	**1.1**	In establishing priorities for watershed assessments, consideration should be given to the Kuskanax, St. Leon, Asher Creeks, Lardeau Creek system, and Halfway River.
		1.2	In establishing priorities for managing Bull Trout through application of the appropriate components of the FPC, consideration should be given to the Kuskanax, St. Leon, Asher Creeks, Lardeau Creek system, and Halfway River.
2.	Maintain wild fish stocks and habitats for existing	**2.1**	Undertake an inventory and assessment of fish stocks and habitats.

	fish species in Trout Lake.		
		2.2	Document the recreational fishery and its potential impacts on existing fish stocks and habitats.
		2.3	Review the present management strategy with the goal of identifying and implementing any required changes.

Hill and Mackenzie Creeks
A-S10

Objective	Strategy	Landscape Units

General Biodiversity

1.	Maintain the regional connectivity corridor between Kokanee Glacier Park and the White Grizzly Park, to contribute to ecosystem representation, to serve as linkage for seasonal migration for grizzly bears and caribou, and to support Kokanee Glacier and White Grizzly Parks.	1.2	Apply the connectivity guidelines within the regional connectivity corridor as indicated in Chapter 3, section 3.3.

Mountain Caribou

1.	Ensure that existing Mountain Caribou populations have sufficient seasonal habitat in the eastern half of the unit.	1.1	Complete the Central Columbia Mountain Caribou Habitat and Inventory Project.

Wide Ranging Carnivores

1.	Maintain sufficient seasonal habitat to retain the existing grizzly populations.	1.1	Complete the Grizzly Bear Inventory Project ongoing within this unit.

Fisheries

1.	Maintain wild fish stocks and habitat for water quantity, quality, timing, flows and terrain stability to support the existing spawning and hatchery facilities as well as wild fish stocks and habitats for Kokanee and Rainbow Trout.	1.1	In establishing priorities for watershed assessments, consideration should be given to Hill and MacKenzie Creeks.
		1.2	Support the Hill Creek Spawning Channel and Hatchery Facility funded by the CBFWCP.

Lower Columbia, Kootenay, Pend d'Oreille and Salmo Rivers
A-I01

Objective	Strategy	Landscape Units

Commercial Tourism

1.	Maintain and enhance opportunities for resorts and commercial backcountry recreation.	1.1	Provide Crown land, as necessary, for expansion of ski areas and resorts at Red Mountain and Salmo. These actions will be subject to consideration of conservation values, municipal and regional planning, and the provincial land use charter and goals.

Recreation

1.	Maintain a range of recreation opportunities from semi primitive non motorized to roaded resource land.	1.1	Ministry of Forests to work with the community of Rossland to develop an integrated resource management plan for the former Nancy Green Recreation area.	A-1 A-2 A-8
		1.2	Manage Renata Arch and Dog Creek Falls for a semi primitive recreation experience.	A-13
2.	Maintain the integrity of the historic Dewdney Trail.	2.1	Manage identifiable portions of the Dewdney Trail, as a Heritage Trail, consistent with the interagency agreement for Heritage Trails.	A-1 A-2 A-4 A-5 A-6

General Biodiversity

1.	Retain forest and grassland ecological elements and processes, including species richness, distribution and diversity at a moderate risk.	1.1	Priorities for implementation of the Fire-Maintained Ecosystem Restoration Guidelines (Chapter 3, section 3.10) exist on the Nine-Mile Range Unit.	
		1.2	Implement a program of road and trail deactivation and rehabilitation, in accordance with the access management guidelines (Chapter 3, section 3.12) on the Nine-Mile Range Unit.	A-4
		1.3	Complete the Forest Interior Conditions Project co-operatively funded by Government and the CBFWCP to research forest habitat conditions. Develop criteria for defining forest habitat interior conditions that may be applied to other areas, and a conservation strategy for such habitat conditions.	A-4
		1.4	Support the Amphibian Monitoring Project funded by the CBFWCP to develop improved wetland habitat for riparian	

			wildlife.
		1.5	Compete the Pend d'Oreille Bat project funded by the CBFWCP to radiotag reproductive females and establish habitat needs for a variety of bat species.
2.	Maintain the regional connectivity corridor from Syringa Park into the upper elevations through Deer and Grizzly Creeks, to contribute to ecosystem representation and to serve as habitat linkage for seasonal migration of ungulates	2.1	Apply connectivity guidelines within the regional connectivity corridor as indicated in Chapter 3, section 3.3.

Ungulates

1.	Maintain the abundance of mule deer, white-tailed deer, elk, moose, big horn sheep and mountain goats within the sustainable carrying capacity of their habitat.	1.1	Complete the Moose Inventory Project within the Nancy Green Lake Area.
		1.2	Maintain the priority summer habitat within this unit through application of the biodiversity emphasis under the FPC.
		1.3	Support the ongoing Large Mammal Monitoring Projects funded by the CBFWCP conducting long term monitoring of sheep in the Robson/Broadwater area; elk on Sentinel Mountain and in the Shelter Bay/Arrowhead area; deer in the Inonoaklin Valley and Pend d'Oreille; and a range of species in the South Salmo River area.
		1.4	Support the Fort Sheppard Bioterrain Ecosystem Mapping Project funded by the CBFWCP. Develop and implement a long term habitat enhancement plan for Fort Sheppard Flats.
		1.5	Support the Pend d'Oreille/South Salmo Habitat and Arrow Lakes Enhancement Projects funded by the CBFWCP, to manipulate vegetation and improve winter range habitat values on the south slopes above the Pend d'Oreille and South Salmo Rivers and adjacent to the Arrow Lakes.

Mountain Caribou

1.	Ensure that existing Mountain Caribou populations have sufficient seasonal habitat throughout the unit.	1.1	Complete the Central Columbia Mountain Caribou Habitat and Inventory Project.

Air Quality

1.	Protect and improve	1.1	Continue to limit emissions from industry through the waste

	air quality in the Community of Trail.		management permitting system.
		1.2	Solicit support for forming an air quality advisory committee in Trail from the City of Trail Council, Trail Blood Lead Task Force, Citizens for a Clean Columbia, Cominco and locally concerned groups or individuals.

Fisheries

1.	Maintain wild fish stocks and habitat for Rainbow and Eastern Brook trout.	1.1	In establishing priorities for watershed assessments, consideration should be given to Murphy, Little Sheep, Beaver Creeks, Pend d'Oreille and Salmo River systems.
2.	Rebuild wild fish stocks and habitats for Rainbow Trout, Bull Trout and Kokanee in Arrow Lakes	2.1	Collect biological and limnological data to define the extent of the Kokanee decline.
		2.2	Maintain high operating standards at the Hill Creek facility.
		2.3	Monitor and assess the data collection program on the fishery to ensure the necessary information will be gained to evaluate stock status.
3.	Rebuild wild fish stocks and habitat for White Sturgeon, Burbot, Bull Trout and Rainbow Trout in the Columbia River downstream of the Keenleyside Dam.	3.1	Assess and monitor fish stocks that are in jeopardy.
		3.2	Continue working with BC Hydro and the Department of Fisheries and Oceans on Columbia River flow issues.
		3.3	Review management strategies for all fish species.
		3.4	Coordinate management activities with United States government agencies.
		3.5	Maintain international contacts with interested organizations and initiate a more formal working group.
		3.6	Assess the impact of newly introduced stocks/species on native fish species.
4.	Maintain wild fish stocks and habitat for Rainbow and Bull Trout in the Salmo River.	4.1	Undertake an inventory and assessment of fish populations.
		4.2	Review habitat conservation strategies to ensure no further impacts.
		4.3	Determine the feasibility of reducing non-sport predators and/or competitors.

Winlaw Creek

A-I02

Objective	Strategy	Landscape Units

General Biodiversity

1.	Maintain the regional connectivity corridor from the West Arm of Kootenay Lake through Lemon Creek into the Arrow Forest District, to contribute to ecosystem representation (ICHmw2), and to serve as habitat linkage for seasonal migration of ungulates.	1.1	Apply the connectivity guidelines within the regional connectivity corridor as indicated in Chapter 3, section 3.3.

Ungulates

1.	Maintain the abundance of mule deer, elk and mountain goats within the sustainable carrying capacity of their habitat.	1.1	Maintain the priority summer habitat within this unit through application of the biodiversity emphasis under the FPC.

Upper Carpenter, Silverton, Enterprise, and Springer Creeks
A-I03

Objective	Strategy	Landscape Units

General Biodiversity

1.	Maintain the regional connectivity corridor following the Lemon Creek drainage to contribute to ecosystem representation, to serve as habitat linkage for seasonal migration of grizzly, and to support Kokanee Park.	1.1	Apply the connectivity guidelines within the regional connectivity corridor as indicated in Chapter 3, section 3.3.

Wide Ranging Carnivores

1.	Maintain sufficient seasonal habitat to retain the existing grizzly populations.	1.1	Complete the Grizzly Bear Inventory Project ongoing within this unit.

Lower Arrow Lake
A-I04

Objective	Strategy	Landscape Units

Recreation

1.	Maintain a range of recreation opportunities from semi primitive non motorized to roaded resource land.	1.2	In the Bannock Burn drainage, develop trails to access Valhalla Provincial Park and other popular mountaineering areas.	A-36

General Biodiversity

1.	Maintain the regional connectivity corridor north and south along the Arrow Lakes system and low elevation Arrow Lakes up into the Valhalla Parks, to contribute to ecosystem representation (ICHmw2)and to serve as habitat linkage for seasonal migration of ungulates and grizzly bear, and to support Granby and Valhalla Parks.	1.1	Apply the connectivity guidelines within the regional connectivity corridor as indicated in Chapter 3, section 3.3.

Ungulates

1.	Maintain the abundance of mule deer, white-tailed deer, elk, moose and mountain goats within the sustainable carrying capacity of their habitat.	**1.1**	Maintain summer habitat in the area throughout the unit through application of biodiversity emphasis options under the FPC.
		1.2	Complete the Mule Deer Inventory Project within the Inonoaklin Valley and adjacent sites.
		1.3	Support the Arrow Lakes Enhancement Project funded by the CBFWCP to manipulate the vegetation and improve the habitat values on the winter ranges on the south slopes adjacent to the Arrow Lakes.

Fisheries

1.	Maintain wild fish stocks and habitat for Kokanee, Rainbow, Bull Trout and Mountain Whitefish.	**1.1**	In establishing priorities for watershed assessments, consideration should be given to Caribou, Burton, Snow, Octopus, Tate and lower Eagle Creeks, and the Whatshan River.
		1.2	In establishing priorities for managing Bull Trout through application of the appropriate components of the FPC, consideration should be given to Caribou, Burton, Snow, Octopus, Taite and lower Eagle Creeks, and the Whatshan River.
2.	Rebuild wild fish stocks and habitats for Rainbow Trout, Bull Trout and Kokanee in Arrow Lakes.	**2.1**	Collect biological and limnological data to define the extent of the Kokanee decline.
		2.2	Maintain high operating standards at the Hill Creek facility.
		2.3	Monitor and assess the data collection program on the fishery to ensure the necessary information will be gained to evaluate stock status.

Upper Arrow Lake
A-I05

Objective	Strategy	Landscape Units

Agriculture

1.	Investigate opportunities for increased or improved agriculture activity, particularly within the Agriculture Land Reserve.	**1.1**	Potential agriculture opportunities identified by proponent application to the appropriate agencies, will be reviewed and evaluated by an inter-agency government process which will involve affected parties and the public.

Access Management

1.	Ensure the range of objectives and strategies are integrated within the Wilkie, Payne and Fostall Creek areas, particularly as they	**1.1**	All proposals for new road development or expansions will be evaluated through either:

	relate to access for proposed development.		- an enhanced referral process as described in the Access Management Guidelines, Chapter 3, section 3.12, or - special measures which, because of imminent development, require immediate attention.

Recreation

1.	Maintain the integrity of the Halfway River Hotsprings.	1.1	The Halfway River Hotsprings should be designated as a Sensitive Area under the FPC.	A-29

General Biodiversity

1.	Maintain the regional connectivity corridor from Arrow Lakes system into the Kootenay Lake District along the Wilson Creek system, and north from Granby Park to Monashee Park, and from White Grizzly Park to Mount Revelstoke National Park, to contribute to ecosystem representation and to serve as habitat linkage for seasonal migration of caribou, and to support Goat Range Park.	1.1	Apply the connectivity guidelines within the regional connectivity corridor as indicated in Chapter 3, section 3.3.
2.	Ensure habitat requirements for red and blue listed and regionally significant species are achieved.	2.1	Complete the first year of the Small Wetlands Enhancement Project funded by the CBFWCP adjacent to the Pend d'Oreille reservoir to increase the availability of rare, highly productive habitat for wetland-dependant species.
		3.2	Identify other potential sites for small wetland creation/enhancement projects.

Ungulates

1.	Maintain the abundance of mule deer, white-tailed deer, elk, moose and mountain goats within the sustainable carrying capacity of their habitat.	1.1	Maintain the priority summer habitat within this unit through application of the biodiversity emphasis under the FPC.
	.	1.2	Complete the Moose Inventory Project in the Mosquito Creek area.

Mountain Caribou

1.	Ensure that existing Mountain Caribou populations have sufficient seasonal habitat throughout the unit.	1.1	Complete the Central Columbia Mountain Caribou Habitat and Inventory Project.

Wide Ranging Carnivores

1.	Maintain sufficient seasonal habitat to	1.1	Complete the Grizzly Bear Inventory

	retain the existing grizzly populations.		Project east of the Arrow Lakes.

Fisheries

1.	Maintain wild fish stocks and habitat for Kokanee, Rainbow Trout and Bull Trout.	1.1	In establishing priorities for watershed assessments, consideration should be given to McDonald, Kuskanax, St. Leon, Halfway, Wilkie and Mosquito Creeks.
		1.2	In establishing priorities for managing Bull Trout through application of the appropriate components of the FPC, consideration should be given to McDonald, Kuskanax, St. Leon, Wilkie and Mosquito Creeks.
		1.3	Complete the first year of the Arrow Lakes Bull Trout Genetics/Stock Identification Project funded by the CBFWCP to understand the genetic implications of habitat and population manipulation. Assist in the development of the Hill Creek Bull Trout hatchery program as well as other management and rehabilitation/enhancement projects.
		1.4	Support the ongoing Arrow Lakes Kokanee Stock Assessment Project funded by the CBFWCP to provide an estimate of the total in-lake abundance and distribution of kokanee in the Upper and Lower Arrow Lakes to assist in fine-tuning spawning channel production and for developing future enhancement activities.
2.	Rebuild wild fish stocks and habitats for Rainbow Trout, Bull Trout and Kokanee in Arrow Lakes.	2.1	Collect biological and limnological data to define the extent of the Kokanee decline.
		2.2	Maintain high operating standards at the Hill Creek facility.
		2.3	Monitor and assess the data collection program on the fishery to ensure the necessary information will be gained to evaluate stock status.

Incomappleux River A-I06

Objective	Strategy	Landscape Units

Recreation

1.	Maintain a range of recreation opportunities from semi primitive non motorized to roaded resource land.	1.1	Maintain opportunities for semi primitive recreation by managing the upland areas (inoperable forest land) of the Battle Range for semi primitive non motorized. No additional recreation structures and trails within the area.	A-31

General Biodiversity

1.	Maintain the regional connectivity corridor from White Grizzly Park to Mount Revelstoke National Park to contribute to ecosystem representation and to	1.1	Apply the connectivity guidelines within the regional connectivity

	serve as habitat linkage for seasonal migration of caribou, and to support Mount Revelstoke National Park.		corridor as indicated in Chapter 3, section 3.3.

Ungulates

1.	Maintain the abundance of mule deer, white-tailed deer, elk and mountain goats within the sustainable carrying capacity of their habitat.	1.1	Maintain summer habitat throughout the Fish River valley, through application of the biodiversity emphasis under the FPC.
		1.2	Complete the Central Columbia Mountain Caribou Habitat and Inventory Project ongoing within the southern portion of the unit.

Appendix A: Community Watersheds within the Arrow Forest District

Note: as the list of Community Watersheds under the Forest Practices Code will evolve over time, this list represents existing community watersheds as of September, 1996. All other watersheds that are used for domestic water purposes are classified as Domestic Watersheds (see Chapter 3, section 3.7).

ARROW S-04

Water Source Community/Water Users Organization

Angel Creek Village of New Denver

Aylard Creek Village of New Denver

Bartlett Creek Village of Silverton

Silverton Creek Village of Silverton

Rashdell Creek Village of New Denver

Springer Creek Brandon Waterworks District, Village of Slocan

Rivulet Creek Central Kootenay Regional District

McFayden Creek McFayden Creek WUC

Climax Creek Brandon Water Works

ARROW S-09

Water Source Community/Water Users Organization

Kuskanax Creek Central Kootenay Regional District

Humphries Creek Trout Lake Improvement District

Batys Creek Trout Lake Improvement District

ARROW I-01

Water Source Community/Water Users Organization

Stussi Creek City of Trail

Edgren Creek City of Trail

Cambridge Creek City of Trail

Casino Creek Casino Waterworks District

Bath Creek Beaver Falls Waterworks District

Fruitvale Creek Kootenay Boundary Regional District

Kelly Creek Kootenay Boundary Regional District

West Little Sheep Creek City of Rossland

Topping Creek City of Rossland

Hanna Creek Rivervale Improvement District

McNally Creek Oasis Waterworks District

South Murphy Creek City of Rossland

ARROW I-01 continued

Water Source Community/Water Users Organization

Elgood Creek City of Rossland

China Creek Genelle Improvement District

Blueberry Creek Blueberry Creek Irrigation District

Glade Creek Glade Irrigation District

Quartz Creek Central Kootenay Regional District

Michael Creek Spud Hill WUC

Arnold Creek Gander Creek WUC

McDermid Creek Krestova Improvement District

Gander Creek Gander Creek WUC

Langill Creek Krestova Improvement District

Norns Creek Robson/Raspberry Improvement District

Deer Creek Deer Park WUC

South Murphy Creek City of Rossland

Mads Brook Poupore Improvement District

Peterson Creek Poupore Improvement District

Blueberry Creek Blueberry Creek Irrigation District

ARROW I-03

Water Source Community/Water Users Organization

Springer Creek Brandon Waterworks District

ARROW I-04

Water Source Community/Water Users Organization

Heart Creek BC Hydro

Caribou Creek BC Hydro

Gwillim Creek Village of Slocan

ARROW I-05

Water Source Community/Water Users Organization

Baerg Creek Baerg Creek Dam WUC

Dog Creek Dog Creek WUC

Brouse Creek Central Kootenay Regional District

Halfway Creek Central Kootenay Regional District

Kuskanax Creek Central Kootenay Regional District

Valahalla Provincial Park

Water Source Community/Water Users Organization

Gwillim Creek Village of Slocan

Appendix B: Protected Areas

The following is a brief description of the new provincial parks that are located within the Arrow Forest District. As well, there is a statement of management intent which defines the proposed management emphasis for the area. The new provincial parks will be managed in accordance with the general management direction outlined in Chapter 4. BC Parks will be undertaking a planning process to develop Park Masterplans for each of the new provincial parks. There will be opportunities for public input and review of the Park Masterplans. An indication of planning priority for each of the new parks is identified in Chapter 4.

Syringa Provincial Park

4,191 hectares

As a result of the government decision on new protected areas, Syringa Provincial Park was extended to encompass a unique ecological zone (IDFun) that is only found is this part of the province and not represented within the protected areas network elsewhere.

The new addition to the park includes habitat for red and blue-listed species, as well as for rocky Mountain Big Horn Sheep, deer and elk. The critical habitats are very diverse as the area includes canyons, cliffs, steep water courses, grasslands and forest. The park also includes First Nations cultural values.

The management emphasis of the area will be on conservation.

Appendix C: Hamling Lakes Wildlife Management Area

Background

The March 1995 government decision on the Kootenay/Boundary Land Use Plan identified the need to establish a Wildlife Management Area (WMA) in the Hamling Lakes area to maintain critical wildlife habitat. The government decision directed government staff to establish boundaries and a management plan for the area. While the WMA will be administered by BC Environment, the land will continue to be within the Provincial Forest and, therefore, MoF and the Chief Forester will also have legal responsibility in the area. As a result, the area will effectively be managed jointly by the two government agencies.

Objective

The primary management objective of the Hamling Lakes Wildlife Management Area is to ensure that diverse ecological characteristics and values, including rare and endangered flora and fauna, are maintained and that such management is integrated with resource development activities, consistent with the KBLUP objectives and strategies. In particular, the Hamling Lakes area provides important habitat for mountain caribou, and other old growth dependent species, as well as other ungulates, grizzly bears, wolverines, a range of birds and fish species.

The Hamling Lakes area also provides support for the Goat Ranges Park as the WMA includes lower elevation wildlife habitats that are absent in the park and are essential for seasonal wildlife migration and movement. Such movement corridors are important for wide ranging species.

WMA Boundary

Map 2 outlines the WMA boundary. The boundary includes the high elevation late winter range around Hamling Lakes and east to the Goat Range Park as well as the low elevation habitat in Kuskanax Creek, Fitzstubbs Creek and Bremner Creek.

Appendix D

Arrow: Rationale for size, boundary locations and biodiversity emphasis assignments, as outlined in Chapter 3, section 3.2 of the KBLUP implementation strategy.

Landscape Unit #	Landscape Unit Name	BEO Assignment	Rationale for size and boundary location	Rationale for BEO assignment/ Values Present
1	Big Sheep	Intermediate, Low	Designed to encompass the entire Big Sheep drainage.	Fisheries (Eastern Brook trout), black bear in Big Sheep riparian complex
2	Lower Columbia	Low	Designed to include west side Lower Columbia from US border to Murphy Creek watershed	Ungulate winter range at Fort Shepherd
3	Beaver Valley	Low	Designed to include Beaver Creek watershed.	fisheries (extremely productive for Eastern Brook trout)
4	Pend' Oreille	Intermediate	Designed to include north and south sides of the Pend 'Oreille River	white tail deer/elk winter range, large number of bat species some which are blue listed species
5	Erie	Low	Designed to include Erie Creek watershed	grizzly bear, bull trout in Salmo river
6	Salmo	Intermediate	Designed to include the watersheds tributary to the east side of the Salmo river	caribou, bull trout, grizzly bear

7				
8	Blueberry	Intermediate, Low	Designed to include both Blueberry and Murphy Creeks	rainbow trout spawning channel on Murphy Creek, ungulate winter range along Columbia River
9	Champion-Glade	Low	Designed to encompass the east side of the Kooteany and Columbia rivers north and south of their confluence.	grizzly bear in vicinity of Siwash Lake, recreation at Champion Lakes Park
10	Ladybird	Low	includes entire Ladybird-Norns watershed	community watershed, kokanee, rainbow trout
11	Cayuse-Deer	High, Intermediate	includes Deer and Cayuse Creeks and south to Syringa	Rocky Mtn. Big Horn Sheep, deer and elk winter range, kokanee
12	Shields-Dog	Intermediate	includes Shields watershed north to Dog Creek	mountain goats, kokanee
13	Renata	Intermediate	large portion of west side of Lower Arrow Lake to Monashee height of land	recreation on lake, kokanee
14				
15	Octopus	Intermediate, Low	large portion of the west side of Lower Arrow Lake	ungulate winter range, Heart Creek community watershed, kokanee
16	Koch	Low	includes Koch and GreasyBill Creeks	grizzly bear, Airy creek domestic watershed,
17	Perry Ridge	Intermediate	encompassses Perry Ridge between Little Slocan and Slocan rivers	domestic watersheds,
18	Slocan	Intermediate	includes most of the west side of the Slocan Valley	domestic watersheds, ungulate winter range
19	Burton	Intermediate	includes Burton and Snow watersheds	Bull trout, rainbow trout, kokanee, black and grizzly bear, community watershed,

Landscape Unit #	**Landscape Unit Name**	**BEO Assignment**	**Rationale for size and boundary location**	**Rationale for BEO assignment**
20	Eagle	Intermediate, Low	includes Eagle and Inonoaklin	mule deer and grizzly bear in ESSF, elk,

			watersheds	kokanee
21				
22	Whatshan	Intermediate, Low	includes Whatshan lake and its tributaries and Barnes watershed	mule deer, grizzly bear,, kokanee, recreation associated with large lake
23	Mosquito	Low	includes Mosquito drainage south of the Mosquito lake	rainbow trout, kokanee, white tail winter range at Arrow Park, moose winter range along Lower Mosquito creek
24	Caribou	Intermediate	includes Caribou and Slewiskin watersheds	Bull trout, rainbow trout, kokanee, community watershed, ungulate winter range
25	Bonanza	Park, Intermediate	includes north half of Valhalla Park, Shannon and Bonanza Creeks	grizzly bear, back country recreation, kokanee, mule deer winter range along east side of Slocan lake.
26	Wilson	Park, High	includes Wilson, Fitzstubbs, Bremner and Hamling Lakes	caribou, grizzly bear, bull trout , rainbow trout, kokanee,
27	Kuskanax	High, Intermediate	Includes Kuskanax watershed and Wensley- Brouse watershed	caribou, grizzly bear, Kuskanax and Wensley-Brouse community watersheds
28	Fostall	Intermediate, Low	includes the Fostall drainages and Mosquito lake area	caribou, grizzly
29	Halfway	High, Intermediate	includes Halfway river watershed and majority of the east side of the Upper Arrow lake	carbou, grizzly bear, Bull trout, rainbow trout, kokanee
30	Trout	High	includes north half of Trout lake and tributaries and Beaton Creek	caribou, grizzly bear, rainbow trout, Bull trout, kokanee, Bald eagle, Hill-Mackenzie Creeks Spawning Channel, extensive riparian complex between Trout Lake and Armstrong Lake
31	Incomappleux	Low	encompasses Incomappleux (Fish river) watershed	grizzly bear, Bull trout, elk winter range on south aspect of North East Arm.
32				

33				
34	Silverton	Intermediate	includes Silverton and Carpenter Creek watersheds	grizzly bear, rainbow trout, bull trout, kokanee, mule deer winter range along east side of Slocan lake.
35	Lemon	Park, High	includes Lemon, Springer and Enterprise watersheds	grizzly bear Bull trout, rainbow trout, kokanee, community watershed, deer winter range

Back to Table of Contents

•Top •Copyright •Disclaimer •Privacy •Government of British Columbia

Kootenay/Boundary Land Use Plan

Implementation Strategy

Kootenay Inter-Agency Management Committee

June 1997

Appendix 2

Implementation Strategy

Land and Resource Management Direction within the Boundary Forest District

June 1997

CONTENTS

1. Purpose
2. Organization
3. Resource Management Zone Objectives & Strategies

Appendices

A Community Watersheds

B Protected Areas

C Rationale for Biodiversity Emphasis Options

1.0 Purpose

This appendix identifies geographically specific land and resource management objectives and strategies for the Boundary Forest District. This site specific management direction covers issues which are:

- not explicitly dealt with through the regional management objectives and strategies (Chapter 2) or the resource management guidelines and accompanying maps

(Chapter 3) because they are of local significance, or:

- local interpretations which assist the implementation of the regional management objectives and strategies (Chapter 2) or the resource management guidelines and accompanying maps (Chapter 3).

2.0 Organization

The material in this appendix is organized and presented according to the KBLUP's land use designation categories. Each of the Resource Management Zones is identified by a reference number. For example, the Resource Management Zones identified as B-S01 indicates that the Resource Management Zone is in the Boundary Forest District (B), is within the special resource management area designation category (S), and is tagged with the identifier number 01.

The site specific management objectives and strategies included in this appendix are listed under headings which correspond to those used in the regional objectives and strategies (Chapter 2). These site specific management objectives and strategies are also tagged to specific landscape units. the Forest Practices Code requires definition of landscape units, including boundaries and management objectives. A landscape unit is a geographic area of land which encompasses a single, or group of, watersheds. Recommended landscape unit boundaries for the Kootenay/Boundary region are identified through section 3.2 of Chapter 3. These areas are generally subunits of Resource Management zones and, in some cases, exist in more than one Zone. The appropriate landscape units are identified in this appendix to assist in translating the management direction into landscape level planning. For further discussion on landscape level planning, please see Chapter 6, section 6.3.

Note: Changes, additions or deletions to the resource objectives and strategies outlined in this Appendix may result from further work at either the regional and/or landscape level. Such changes will be undertaken in a manner consistent with the mechanism for Plan Amendment (Chapter 6, section 6.8) or through subsequent landscape level planning (Chapter 6, section 6.3).

3.0 Resource Management Zone Objectives and Strategies

Gilpin Grasslands, Snowball Creek, West Side of Christina Lake
B-S01

Objective	Strategy	Landscape Units
Access Management		
1. Ensure the range of objectives and strategies are integrated in the grassland area, particularly as they relate to access for proposed development.	1.1 All proposals for new road development or expansions will be evaluated through either: • an enhanced referral process as described in the Access Management Guidelines, Chapter	

			3, section 3.12, or • special measures which, because of imminent development, require immediate attention.

General Biodiversity

1.	Retain forest and grassland ecological elements and processes, including species richness, distribution and diversity at a moderate risk to basic stewardship level.	**1.1**	Implement a program of road and trail deactivation and rehabilitation, in accordance with the access management guidelines (Chapter 3, section 3.12). In establishing priorities for access management, consideration should be given to the Overton-Moody Range Unit.
2.	Maintain the regional connectivity corridor between Gladstone Park and the United States, to contribute to ecosystem representation (PP, ICH, IDF subzones), to serve as habitat linkage for the seasonal migration of ungulates, and to support Gladstone Park	**2.1**	Apply the connectivity guidelines within the regional connectivity corridor as indicated in Chapter 3, section 3.3.
3.	Retain attributes for old growth dependent species and fur bearers.	**3.1**	In establishing priorities for Old Growth Management Areas, consideration should be given to the Interior Cedar-Hemlock zone in the northern part of the unit and to Interior Douglas Fir at the forest/grassland interface.
4.	Ensure habitat requirements for red and blue listed and regionally significant species are achieved.	**4.1**	Maintain mature grasslands near hibernaculum for Western Rattlesnake through application of the appropriate components of the FPC.

Ungulates

1.	Maintain the abundance of mule and white-tailed deer, elk and California Big Horn Sheep within the sustainable carrying capacity of their habitat.	**1.2**	Maintain the priority summer habitat within this unit through application of the biodiversity emphasis under the FPC.

Texas Creek
B-S02

Objective	Strategy	Landscape Units

General Biodiversity

1.	Maintain the regional connectivity corridor between Gladstone Park and the United States, contribute to ecosystem representation and to serve as habitat linkage for the seasonal migration of ungulates, and	**1.1**	Apply the connectivity guidelines within the regional connectivity corridor as indicated in Chapter 3,

	to support Gladstone Park.		section 3.3.

Galloping Mountain and Headwaters of Burrell Creek
B-S03

Objective	Strategy	Landscape Units

Access Management

1.	Ensure the range of objectives and strategies are integrated throughout the unit, particularly as they relate to access for proposed development.	1.1	All proposals for new road development or expansions will be evaluated through either: • an enhanced referral process as described in the Access Management Guidelines, Chapter 3, section 3.12, or • special measures which, because of imminent development, require immediate attention.

General Biodiversity

1.	Retain forest and alpine grassland ecological elements and processes, including species richness, distribution and diversity at a low risk.	1.1	No new cattle or sheep grazing tenures to be issued for the alpine grasslands. Maintain existing tenure.
2.	Maintain the regional connectivity corridor between Burrell Creek and the Arrow Lakes system, to contribute to ecosystem representation (ICHmw), to serve as habitat linkage for the seasonal migration of grizzly bears and to support the Granby Wilderness Area.	2.1	Apply the connectivity guidelines within the regional connectivity corridor as indicated in Chapter 3, section 3.3.

Ungulates

1.	Maintain the abundance of Rocky Mountain Goats within the sustainable carrying capacity of their habitat.	1.1	Maintain the priority summer habitat within this unit through application of the biodiversity emphasis options under the FPC.
		1.2	Maintain summer alpine habitat and minimize displacement of ungulates through access management to be consistent with the Access Management Guidelines, Chapter 3, section 3.1

Wide Ranging Carnivores

1.	Maintain sufficient seasonal habitat to retain the existing grizzly populations.	1.1	Grizzly bear management issues will be considered as a priority in determining the schedule for landscape unit planning.

		1.2	Minimize grizzly displacement through access management to be consistent with the Access Management Guidelines, Chapter 3, section 3.12.
		1.3	Complete the ongoing Grizzly Bear Inventory Project.
2.	Ensure the existing lynx populations are maintained or enhanced.	2.1	Maintain sufficient prey habitat and, therefore, adequate prey populations by leaving 10% of the treatment unit in key habitats unspaced, unpruned and unbrushed. Exclude non-productive brush types from vegetation controls.
3.	Ensure the existing wolverine populations are maintained or enhanced.	3.2	Information from the ongoing wolverine inventory project in the Revelstoke/Golden area to identify management opportunities.

Goatskin Creek
B-S04

Objective	Strategy	Landscape Units

Access Management

1.	Ensure the range of objectives and strategies are integrated throughout the unit, particularly as they relate to access for proposed development.	1.1	All proposals for new road development or expansions will be evaluated through either: • an enhanced referral process as described in the Access Management Guidelines, Chapter 3, section 3.12, or • special measures which, because of imminent development, require immediate attention.

Recreation

1.	Maintain a range of recreation opportunities from semi primitive non motorized to roaded resource land.	1.1	A lower level strategic planning process will designate areas for semi primitive non motorized summer recreation, semi primitive motorized winter recreation and roaded resource land.

General Biodiversity

1.	Retain forest and alpine grassland ecological elements and processes, including species richness, distribution and diversity at a low to moderate risk.	1.1	No cattle or sheep grazing tenures to be issued for the alpine grasslands.
2.	Maintain the regional connectivity corridor between the headwaters of Rendell Creek and over into the Okanagan, as well as down into the Granby system, to contribute to ecosystem representation (ESSFdc), to serve as habitat linkage for the seasonal	2.1	Apply the connectivity guidelines within the regional connectivity corridor as indicated in Chapter 3, section 3.3.

	migration of grizzly bears, and to support the Granby Wilderness area.		
3.	Retain attributes for old growth dependent species and fur bearers.	3.1	In establishing priorities for Old Growth Management Areas, consideration should be given to the Englemann Spruce Sub Alpine Fir zone throughout the unit.

Ungulates

1.	Maintain the abundance of Rocky Mountain Goats within the sustainable carrying capacity of their habitat.	1.1	Maintain habitat within this unit through application of the biodiversity emphasis under the FPC.
		1.2	Maintain summer alpine habitat and minimize displacement of ungulates through access management to be consistent with the Access Management Guidelines, Chapter 3, section 3.12.

Wide Ranging Carnivores

1.	Maintain sufficient habitat throughout the unit to restore, maintain or enhance grizzly bear populations.	1.1	Grizzly bear management issues will be considered as a priority in determining the schedule for landscape unit planning.
		1.2	Minimize grizzly displacement through access management to be consistent with the Access Management Guidelines, Chapter 3. section 3.12.
		1.3	Complete the ongoing Grizzly Bear Inventory project.

Fisheries

1.	Maintain wild fish stocks and habitat for Rainbow Trout.	1.1	In establishing priorities for watershed assessments, consideration should be given to the headwaters of Goatskin Creek.

Kettle - Granby
B-I01

Objective	Strategy	Landscape Units

General Biodiversity

1.	Retain forest and grassland ecological elements and processes, including species richness, distribution and diversity at a moderate to basic stewardship level.	1.1	Priorities for early implementation of the Fire-Maintained Ecosystem Restoration Guidelines (Chapter 3, section 3.10) exist on the Lost Horse

			Creek Range Unit.
		1.2	Implement a program of road and trail deactivation and rehabilitation, in accordance with the access management guidelines (Chapter 3, section 3.12).
2.	Maintain the regional connectivity corridors: a) running north-south from the Okanagan through the headwaters of Copper Kettle Creek south down the Kettle drainage; b) east-west from Paturages Creek to Almond Creek linking the Kettle and Granby systems; c) running north-south between the Granby and Gladstone Parks from Gable Creek to the Gilpin Grasslands, to contribute to ecosystem representation (IDF, ICH, MS), and to serve as habitat linkage for the seasonal migration of ungulates, and to support the Granby and Gladstone Parks.	**2.1**	Apply the connectivity guidelines within the regional connectivity corridor as indicated in Chapter 3, section 3.3.
3.	Retain attributes for old growth dependent species and fur bearers.	**3.1**	In establishing priorities for Old Growth Management Areas, consideration should be given to Cedar and Hemlock in Molly and Howe Creeks, to mixed old growth species in the Rendell Creek area, within the Interior Douglas Fir, Montana Spruce, Interior Cedar-Hemlock and Engelmann Spruce Sub Alpine Fir zones in Boundary Creek and the Interior Douglas Fir and Montana Spruce zones within Carni and China Creek.
4.	Ensure habitat requirements for red and blue listed and regionally significant species are achieved.	**4.1**	Maintain the red and blue-listed plant communities (as defined by the Data Conservation Centre) within the Christian Valley and the bottom of the Kettle Valley through application of the appropriate components of the FPC.

Ungulates

1.	Maintain the abundance of regionally significant mule and white-tailed deer, elk and moose within the sustainable carrying capacity of their habitat.	**1.1**	Maintain the priority summer habitat within this unit through application of the biodiversity emphasis under the FPC.

Wide Ranging Carnivores

1.	Maintain sufficient habitat in the northeast half of the unit (the area running from the Copper Kettle to the community of Grand Forks), to restore, maintain or enhance grizzly bear populations.	**1.1**	Within the context of the assigned biodiversity emphasis, emphasize seral retention in high priority grizzly habitat between Granby and Burrell Creeks.
		1.2	Grizzly bear management issues will be considered as a priority in determining the schedule for landscape unit planning.
		1.3	Minimize grizzly displacement through access management to be consistent with the Access Management Guidelines, Chapter 3, section 3.12.
		1.4	Complete the Grizzly Bear Inventory project.
2.	Ensure the existing marten populations are maintained or enhanced.	**2.1**	Maintain sufficient prey habitat and, therefore, adequate prey populations.
		2.2	Retain appropriate amounts of slash piles following logging and post treatment, and coarse woody debris through application of the appropriate components of the FPC.

Fisheries

1.	Maintain wild fish stocks and habitat for Rainbow Trout, Mountain Whitefish and Brook Trout	**1.1**	In establishing priorities for watershed assessments, consideration should be given to the Kettle, Granby and West Kettle systems.

Kettle River
B-I02

Objective	Strategy	Landscape Units

Heritage/Culture

1.	Maintain the integrity of the historic Dewdney Trail.	**1.1**	See Recreation strategy below.

Recreation

1.	Maintain the integrity of the historic Dewdney Trail.	**1.1**	Within the May Creek drainage, manage identifiable portions of the Dewdney Trail, as a Heritage Trail, consistent with the interagency agreement for Heritage Trails.	B-2

General Biodiversity

1.	Retain forest and grassland ecological	**1.1**	Priorities for implementation of the Fire-

	elements and processes, including species richness, distribution and diversity at a moderate to basic stewardship level.		Maintained Ecosystem Restoration Guidelines (Chapter 3, section 3.10) exist on the Johnstone Creek, Kettle Valley South and Overton-Moody Range Units.
		1.2	Implement a program of road and trail deactivation and rehabilitation, in accordance with the access management guidelines (Chapter 3, section 3.12). In establishing priorities for access management, consideration should be given to the Ingram-Boundary, Johnstone Creek and Overton-Moody Range Units.
2.	Maintain the regional connectivity corridors running east-west between Westbridge towards Norwegian Creek and north-south to the United States border at the community of Rock Creek, to contribute to ecosystem representation (IDF, PP), and to serve as habitat linkage for seasonal migration of ungulates.	2.1	Apply the connectivity guidelines within the regional connectivity corridor as indicated in Chapter 3, section 3.3.
3.	Ensure habitat requirements for red and blue listed and regionally significant species are achieved.	3.1	Maintain required mature grassland habitats for the diverse range of red and blue-listed species located within grassland and grassland/forest interface areas, subject to the Fire-Maintained Ecosystem Restoration Guidelines (Chapter 3, section 3.10).

Ungulates

1.	Maintain the abundance of mule and white-tailed deer, elk, moose and California Big Horn Sheep within the sustainable carrying capacity of their habitat.	1.1	Maintain the priority summer habitat within this unit through application of the biodiversity emphasis under the FPC.

Fisheries

1.	Maintain wild fish stocks and habitat for Rainbow and Brook Trout.	1.1	In establishing priorities for watershed assessments, consideration should be given to Myers, Rock, Eholt and Jewel Creeks.

Christina Lake/Sutherland Creek

B-I03

Objective	Strategy	Landscape Units

Recreation

1.	Maintain the integrity of the historic Dewdney Trail.	**1.1**	Manage identifiable portions of the Dewdney Trail, as a Heritage Trail, consistent with the interagency agreement for Heritage Trails.	B-4

General Biodiversity

1.	Maintain the regional connectivity corridor between the Gladstone Park and into the Arrow Forest District and the United States to contribute to ecosystem representation (ICH), to serve as habitat linkage for the seasonal migration of ungulates, and to support Gladstone Park.	**1.1**	Apply the connectivity guidelines within the regional connectivity corridor as indicated in Chapter 3, section 3.3.

Ungulates

1.	Maintain the abundance of mule and white-tailed deer and elk within the sustainable carrying capacity of their habitat.	**1.1**	Maintain the priority summer habitat within this unit through application of the biodiversity emphasis under the FPC.

Fisheries

1.	Maintain wild fish stocks and habitat for Kokanee and Rainbow Trout and Bass, Sunfish and White Sturgeon resident in the Christina Creek system.	**1.1**	In establishing priorities for watershed assessments, consideration should be given to the McRae, Sutherland and Christina Creek systems.
		1.2	In establishing priorities for managing White Sturgeon through application of the appropriate components of the FPC, consideration should be given to the Christina Creek system.
2.	Maintain wild fish stocks and habitats for existing species in Christina Lake.	**2.1**	Document the recreational fishery and fish life histories.
		2.2	Assess spawning and rearing habitats.
		2.3	Implement a tributary restoration program.
		2.4	Undertake a public education program on fish and fisheries management.

Appendix A Community Watersheds

Note: as the list of Community Watersheds under the Forest Practices Code will evolve over time, this list represents existing community watersheds as of September, 1996. All other watersheds that are used for domestic water purposes are classified as Domestic Watersheds (see Chapter 3, section 3.7).

BOUNDARY S-01

Water Source Community/Water Users Organization

Overton Creek City of Grand Forks

Moody Creek Christina Waterworks District

BOUNDARY I-02

Water Source Community/Water Users Organization

McKinney Creek Mt. Baldy Waterworks Inc.

Brides Creek Bridesville Waterworks District

Lind Creek City of Greenwood

Providence Creek City of Greenwood

Twin Creek City of Greenwood

BOUNDARY I-03

Water Source Community/Water Users Organization

Sutherland Creek Sutherland Creek Waterworks District

Note: Chalet and Skiing Brook and Trapping Creek are community watersheds for R87 Enterprises but have not been identified as to the particular RMZ they are within.

Appendix B Protected Areas

The following is a brief description of the new provincial parks that are located within the Boundary Forest District. As well, there is a statement of management intent which defines the proposed management emphasis for the area. The new provincial parks will be managed in accordance with the general management direction outlined in Chapter 4. BC Parks will be undertaking a planning process to develop Park Masterplans for each of the new provincial parks. There will be opportunities for public input and review of the Park Masterplans. An indication of planning priority for each of the new parks is identified in Chapter 4.

Gladstone Provincial Park
39,361 hectares

The new Gladstone Provincial Park is located about 20 kilometres northeast of Grand Forks and extends to the shoreline along the northern half of Christina Lake. The area is unroaded and largely undisturbed.

Gladstone Provincial Park has captured significant ecological zones that were underrepresented with the protected areas system. The low elevation habitats are important winter ranges for deer and elk. The new park also contains high value spawning areas for Kokanee.

The areas is an extremely important four season recreation area providing opportunities for water sports, hiking, horseback riding, hunting, wildlife viewing, camping and fishing. The areas supports an important tourism industry in connection with Christina Lake.

The management emphasis will be on recreation around the lake and conservation in the upland areas.

Granby Provincial Park
40,845 hectares

The new Granby Provincial Park is located about 65 kilometres north of Grand Forks. It is a large undisturbed area composed of the headwaters of the Granby River with extensive alpine-subalpine meadows and grasslands.

The new park is one of the few large undisturbed watersheds in the Southern Okanagan/Boundary areas. It provides important habitat for mountain goat and a regionally significant grizzly bear population. The area includes old growth forest and an extensive alpine-subalpine grassland meadow complex.

Year round recreational opportunities include hiking, fishing, hunting, horseback riding, snowmobiling, guide outfitting and camping.

The management emphasis will be one of conservation.

Appendix C

Boundary: Rationale for size, boundary locations and biodiversity emphasis assignments, as outlined in Chapter 3, section 3.2 of the KBLUP implementation strategy.

Landscape Unit #	Landscape Unit Name	BEO Assignment	Rationale for Size and Boundary Location	Rationale for BEO Assignment
1	Rock	Intermediate	• consistent with E/vi orientation of drainage • North Boundary captures important winter ranges, Red/Blue habitat, and IDFxhl and	Ungulate Winter Range (highest value in Boundary District Msdml); Ecosystem and Species Diversity would go to B2. 90% of R & B (stand attribute dependent); Red & Blue

			PPdhl. • East Boundary - Phoenix height of land • West Boundary - regional • South Boundary - U.S.A.	listed species: IDFdm1, Ppdh1, IDFxh1 & 1a.
2	Gilpin	Intermediate	• North Boundary captures important winter range, Red/Blue habitat, and IDFxhl & PPdhl. • West Boundary - Phoenix height of land • East Boundary - Height of land - Mt. Morrisey • South Boundary - U.S.A.	Red & Blue listed species, Ungulate winter range, IBE, Regional Connectivity; Ecosystem Representation ie., grassland interface; representative of SOH ecosection; most sensitive soils and plant communities; connectivity to Okanagan Region; IDFdm1, IDFxh1&1a, PPdh1 and ICHmk1.
3	Lynch	Intermediate	• West Boundary follows height of land (H.O.L.) between Granby River & Boundary Creek • East Boundary - H.O.L. along west edge of Christina Lake basin • North Boundary - confluence of Granby River and Burrell Creek	Red and Blue listed species, Ungulate winter range, public concerns; ESSFwc4 %dc1; ICHmw2, ICHmk1, ICHdw, IDFdm1; Representative of Selkirk Foothills ecosection, connectivity, partially within proposed GBCA
4	Christina	Intermediate	• West Boundary - H.O.L. along west edge Christina Lake basin • North/East Boundary - follows Boundary of Arrow F.D. • South Boundary - U.S.A.	Grizzly Bear, Alpine Grasslands*: IDFxh1, ICHdm1, ICHmw2, ICHdm1, ICHmk1, Essfwc4, connectivity to Gladstone park, community watersheds, Ungulate winter range, within GBCA
5	Kelly	Low	• West - Penticton F.D. • North - TFL8 -	Part of NOH ecosection, Representative

			administrative • East - H.O.L. south to confluence of main and west Kettle • South - H.O.L. confluence of Main and west Kettle	
6	Kettle	Low	• South, East, West Boundary formed by the main Kettle watershed H.O.L. • North Boundary - confluence of main Kettle and Rendell Creek	Regional Connectivity between B1 and B9; Old Growth; IBE; Ungulate winter range; NE section of L.U is GBCA
7	Boundary	Low	- South Boundary - H.O.L. between Boundary Creek and Kettle River; all other boundaries formed by H.O.L. surrounding Boundary Creek basin.	NOH ecosection; Old Growth; Ungulate Winter Ranges; Red and Blue Listed Species

Landscape Unit #	**Landscape Unit Name**	**BEO Assignment**	**Rationale for Size and Boundary Location**	**Rationale for BEO Assignment**
8	Trapping	Low	• East - H.O.L. between west and main Kettle River • North & West - Penticton F.D. • South - TFL8 administrative	Same as B5; Heavy harvesting in Trapping Creek.
9	Gable	Intermediate	• South - confluence of Burrell Creek and upper Granby • Remainder of boundary formed by H.O.L. surrounding the upper Granby watershed.	Old Growth in ESSF; GBCA core area; Granby Park; Wide ranging Carnivores; Mountain goat ranges; Alpine ecosystems
10	Burrell	High/Intermediate	- All boundaries - H.O.L. around the entire Burrell Creek drainage.	Grizzly Bear, Connectivity to Arrow/Granby and Gladstone, Old

				Growth, Alpine Grasslands, Low Road Densities
11	Rendell	High/Intermediate	• South - confluence of Rendell Creek and main Kettle River. • New boundary - Penticton F.D. • East Boundary - H.O.L. between Rendell Creek and upper Granby River.	Grizzly Bear, Alpine Grasslands, Old Growth, connectivity to Granby park; Area Less Roaded

* The only ecosystem complexity in B4 is the settlement area of Christina Lake (IDFdml & xhl are settled). The IDFdml & xhl in B4 should really be managed with B2 which is more similar.

Back to Table of Contents

•Top •Copyright •Disclaimer •Privacy •Government of British Columbia

W3C HTML 4.01

• Ministry Home
• Government of British Columbia
Kootenay Region
Ministry of Sustainable Resource Management
The Minister
News
Search
Reports & Publications
Home
Contacts

Kootenay/Boundary Land Use Plan

Implementation Strategy

Kootenay Inter-Agency Management Committee

June 1997

Appendix 3

Land and Resource Management Direction within the Cranbrook Forest District

June 1997

CONTENTS

Section

1. Purpose
2. Organization
3. Resource Management Zone Objectives & Strategies

Appendices

A Community Watersheds

B Protected Areas

C Rationale for Biodiversity Emphasis Options

1.0 Purpose

This appendix identifies geographically specific land and resource management objectives and strategies for the Cranbrook Forest District. This site specific management direction covers issues which are:

- not explicitly dealt with through the regional management objectives and strategies (Chapter 2) or the resource management guidelines and accompanying maps

(Chapter 3) because they are of local significance, or:

- local interpretations which assist the implementation of the regional management objectives and strategies (Chapter 2) or the resource management guidelines and accompanying maps (Chapter 3).

2.0 Organization

The material in this appendix is organized and presented according to the KBLUP's land use designation categories. Each of the Resource Management Zones is identified by a reference number. For example, the Resource Management Zones identified as C-S01 indicates that the Resource Management Zone is in the Cranbrook Forest District (C), is within the special resource management area designation category (S), and is tagged with the identifier number 01.

The site specific management objectives and strategies included in this appendix are listed under headings which correspond to those used in the regional objectives and strategies (Chapter 2). These site specific management objectives and strategies are also tagged to specific landscape units. the Forest Practices Code requires definition of landscape units, including boundaries and management objectives. A landscape unit is a geographic area of land which encompasses a single, or group of, watersheds. Recommended landscape unit boundaries for the Kootenay/Boundary region are identified through section 3.2 of Chapter 3. These areas are generally subunits of Resource Management zones and, in some cases, exist in more than one Zone. The appropriate landscape units are identified in this appendix to assist in translating the management direction into landscape level planning. For further discussion on landscape level planning, please see Chapter 6, section 6.3.

Note: Changes, additions or deletions to the resource objectives and strategies outlined in this Appendix may result from further work at either the regional and/or landscape level. Such changes will be undertaken in a manner consistent with the mechanism for Plan Amendment (Chapter 6, section 6.8) or through subsequent landscape level planning (Chapter 6, section 6.3).

3.0 Resource Management Zone Objectives and Strategies

Upper Elk Valley - West Side
C-S01

Objective		Strategy		Landscape Units
Recreation				
1.	Maintain a range of recreation opportunities from roaded to semi primitive.	1.1	There are road accessed forest recreation sites and trails that should be managed for a roaded resource land setting. (e.g. trailhead and recreation site at entrance to Height of the Rockies Provincial Park, Weary Recreation Site).	C-23
		1.2	Motorized use restrictions may be required to maintain semi primitive non motorized character.	C-23

General Biodiversity

1.	Maintain the regional connectivity corridor between the Wigwam, Elk and Bull watersheds to The Height of the Rockies Provincial Park and Mount Assiniboine and Kootenay National Parks, to serve as habitat linkage for the seasonal migration of ungulates and to support the Height of the Rockies and Elk Lakes Provincial Parks.	**1.1**	Apply the connectivity guidelines within the regional connectivity corridor as indicated in Chapter 3, section 3.3.
2.	Retain attributes for old growth dependent species and fur bearers.	**2.1**	Priority areas for Old Growth Management Area establishment include the unit.
3	Maintain sufficient alpine habitat to sustain Ptarmigan at or above the current population levels.	**3.1**	Address Ptarmigan habitat requirements through access management planning to be consistent with the Access Management Guidelines, Chapter 3, section 3.2.

Ungulates

1.	Maintain the abundance of mule deer, white-tailed deer, elk and moose within the sustainable carrying capacity of their habitat.	**1.1**	Maintain summer habitat by developing an access management plan to ensure compatible industrial and recreational activity and uses in the area.
2.	Maintain the abundance of the regionally significant Rocky Mountain Big Horn Sheep and Rocky Mountain Goat populations in the alpine areas within the sustainable carrying capacity of their habitat.	**2.1**	Regulate ATV access in alpine areas and undertake zoning for recreational use in accordance with the access management guidelines (Chapter 3, section 3.12).

Wide Ranging Carnivores

1.	Maintain sufficient habitat throughout the unit to ensure grizzly bear populations are maintained or enhanced.	**1.1**	Develop and implement an avalanche chute habitat plan for grizzly bears in this unit.
		1.2	Complete the Upper Elk River Grizzly Bear Inventory Project.
2.	Maintain sufficient habitat throughout the unit to ensure wolverine populations are maintained or enhanced.	**2.1**	Information being generated through an inventory project in the Revelstoke/Golden areas to provide management opportunities.
3.	Ensure the existing wolf populations are maintained or enhanced.	**3.1**	Maintain sufficient prey habitat, and, therefore, adequate prey populations.

North Galbraith
C-S02

Objective	Strategy	Landscape Units

Access Management

	Objective		Strategy
1.	Ensure the range of objectives and strategies are integrated throughout the unit, particularly as they relate to access for proposed development.	**1.1**	All proposals for new road development or expansions will be evaluated through either: • an enhanced referral process as described in the Access Management Guidelines, Chapter 3, section 3.12, or • special measures which, because of imminent development, require immediate attention.

Recreation

	Objective		Strategy	Landscape Units
1.	Maintain a range of recreation opportunities toward the semi-primitive end of the Recreation Opportunity Spectrum.	**1.1**	Amount of roaded resource land to be determined in lower level planning.	C-28

General Biodiversity

	Objective		Strategy
1.	Maintain the regional connectivity corridor between the Continental Divide and the Selkirk Mountains (linking SRMZ units C-S01, C-S06 and C-S05) to contribute to ecosystem representation (ICHmk1,ICHmw2), to serve as habitat linkage for the seasonal migration of ungulates and grizzly bears and to support the Top of the World Provincial Park.	**1.1**	Apply the connectivity guidelines within the regional connectivity corridor as indicated in Chapter 3, section 3.3.
2.	Maintain the integrity of alpine environments.	**2.1**	Address alpine habitat through access management, as required, in conformance with the Access Management Guidelines, Chapter 3, section 3.12.

Steeples - Mt. Fisher
C-S03

Objective	Strategy	Landscape Units

Recreation

	Objective		Strategy	Landscape Units
1.	Maintain a range of recreation opportunities towards the semi primitive end of the Recreation Opportunity Spectrum.	**1.1**	Manage and maintain opportunities for semi primitive non motorized recreation by managing the upland areas for semi-primitive non motorized recreation physical environments and experience settings.	C-28 C-29
		1.2	Maintain existing trails.	C-28 C-

				29
2.	Maintain non-commercial public opportunities for backcountry recreation throughout the unit.	2.2	Commercial Backcountry Recreation applications will be reviewed for their ability to maintain or enhance non-commercial public backcountry recreation opportunities.	C-28 C-29

General Biodiversity

1.	Retain attributes for old growth dependent species and fur bearers.	11	In establishing priorities for Old Growth Management Areas, consideration should be given to Cedar and Hemlock in Dibble and Mause Creeks.
		1.2	Support the Large Mammal Monitoring Project funded by the CBFWCP, to aid in developing enhancement plans.
2.	Maintain the integrity of alpine environments.	2.1	Address alpine habitat through access management, as required, in conformance with the Access Management guidelines, Chapter 3, section 3.12.

Pickering Hills
C-S04

Objective	Strategy	Landscape Units

General Biodiversity

1.	Retain grassland ecological elements and processes, including species richness, distribution and diversity at a basic stewardship level.	1.1	Priorities for early application of the Fire Maintained Ecosystem Restoration Guidelines (Chapter 3, section 3.10) include Pickering Hills and Colvalli Range Units.	C-34
		1.2	Maintain the existing access management program in the Pickering Hills Range Unit. Initiate access management and road/trail deactivation and rehabilitation for the Colvalli Range in accordance with the access management guidelines (Chapter 3, section 3.12).	C-34
		1.3	New or existing Christmas tree permits will be reviewed with the goal of concentrating intensive management in the most suitable sites within the permit area.	C-34
2.	Maintain regional connectivity corridor between the east and west sides of the East Kootenay Trench to contribute to ecosystem representation (EKT - IDFdm2) contribute to serve as habitat linkage for the seasonal migration of ungulates.	2.2	Apply the connectivity guidelines within the regional connectivity corridor as indicated in Chapter 3, section 3.3.	

3.	Maintain suitable habitat for residing and migrating waterfowl.	3.1	Continue co-operative management with Ducks Unlimited.	C-34

Wide Ranging Carnivores

1.	Ensure the existing cougar, coyote and wolf populations are maintained or enhanced.	1.1	Maintain sufficient prey habitat and, therefore, adequate prey populations.

Flathead River Corridor
C-S05

Objective	Strategy	Landscape Units

Access Management

1.	Ensure the range of objectives and strategies are integrated within the upper Flathead River and McEvoy Creek area, particularly as they relate to access for proposed development.	1.1	All proposals for new road development or expansions will be evaluated through either: • an enhanced referral process as described in the Access Management Guidelines, Chapter 3, section 3.12, or • special measures which, because of imminent development, require immediate attention.

Recreation

1.	Maintain a range of recreation opportunities from roaded resource land to semi-primitive non motorized.	1.1	Motorized use restrictions may be required to maintain semi primitive character.	C-16
		1.2	Manage the Flathead River as a Backcountry River Corridor consistent with the Backcountry Recreation Guidelines (Table 1.2,) Apply for non motorized use restriction through Transport Canada.	C-18

General Biodiversity

1.	Maintain regional connectivity corridor to ensure the north-south connection between the Elk Valley into the United States to contribute to ecosystem representation (BRR - MSdk), to serve as habitat linkage for the seasonal migration of grizzly bears, wolves, ungulates and rare and endangered species and to support the Akamina-Kishinena Provincial Park.	1.2	Apply the connectivity guidelines within the regional connectivity corridor as indicated in Chapter 3, section 3.3.
2.	Ensure habitat requirements for red and blue listed and regionally significant species are achieved.	2.1	Designate Rocky Mountain Red Tailed Frog, Least Chipmunk, Southern Red-Backed Vole and the Tailed Frog as identified wildlife

			under the FPC.
		2.2	The rare plant communities in the Proctor Lake area should be designated as a Sensitive Area under the FPC.

Ungulates

1.	Maintain the abundance of mule deer, white-tailed deer, elk and moose within the sustainable carrying capacity of their habitat.	1.1	The mineral lick at Sage Creek should be designated as a Sensitive Area under the FPC
		1.2	Maintain suitable summer habitat for mule and white-tailed deer within this unit through application of the biodiversity emphasis under the FPC.
		1.3	Maintain current use of summer and winter ranges for ungulates with no domestic livestock tenures allocated within the unit.

Wide Ranging Carnivores

1.	Maintain the regionally significant grizzly bear habitat to retain the existing grizzly bear population.	1.1	Maintain high productivity berry patches by: a) introducing controlled fires b) no herbicides to be utilized in high productivity berry patch areas.
		1.2	Complete the Flathead River Drainage Grizzly Bear Inventory Project.
2.	Ensure the regionally significant wolf populations are maintained or enhanced.	2.1	Maintain sufficient prey habitat and, therefore, adequate prey populations.
		2.2	Continue co-operative wolf management with the United States government.

Fisheries

1.	Maintain wild fish stocks and habitat for spawning, rearing and overwintering Bull Trout.	1.1	In establishing priorities for watershed assessments and for managing Bull Trout through application of the appropriate components of the FPC, consideration should be given to the principal tributaries within the unit.
2.	Rebuild wild fish stocks and habitats for Cutthroat and Bull Trout in the Flathead River.	2.1	Restore fish habitat and identify strategies to offset impacts of resource development.
		2.2	Cooperate with the State of Montana on monitoring

			stock status of Bull Trout.
		2.3	Assess current status of fish populations and fish habitat.
		2.4	Review current management strategies.

Upper Wigwam River
C-S06

Objective	Strategy	Landscape Units

Access Management

1.	Ensure the range of objectives and strategies are integrated throughout the unit, particularly as they relate to access for proposed development.	1.1	All proposals for new road development or expansions will be evaluated through either: • an enhanced referral process as described in the Access Management Guidelines, Chapter 3, section 3.12, or • special measures which, because of imminent development, require immediate attention.

Recreation

1.	Maintain a range of recreation opportunities toward the semi-primitive end of the Recreation Opportunity Spectrum.	1.1	Areas roaded to be managed for semi primitive motorized recreation with road rehabilitation, road deactivation and access management restrictions to take place following resource development.	C-14
		1.2	Manage the Wigwam River as a Backcountry River Corridor consistent with the Backcountry Recreation Guidelines Chapter 3, section 3.9. Apply for non motorized use restriction through Transport Canada.	C-14
		1.3	No permanent road access within 500m of the river unless it is less environmentally damaging to construct the road within this 500m zone. New roads constructed for resource development and not needed for ongoing resource management, to be deactivated upon conclusion of resource development.	C-14

General Biodiversity

1.	Maintain the regional connectivity corridor between the Flathead and Ten Lakes Wilderness Area in the United States and north to Wigwam Flats and the Mount Broadwood Winter range, to contribute to ecosystem representation (BRR - Msdk, Essfdk) and to serve as habitat linkage for the seasonal migration of grizzly and black bears, wolves and ungulates.	1.1	Apply the connectivity guidelines within the regional connectivity corridor as indicated in Chapter 3, section 3.3.

Ungulates

1.	Maintain the abundance of elk, mule deer, white-tailed deer, moose, Rocky Mountain Bighorn Sheep and Rocky Mountain Goats within the *sustainable carrying capacity of their habitat.*	1.1	Ensure seasonal foraging opportunities through application of the biodiversity emphasis under the FPC.
		1.2	Maintain foraging opportunities for wildlife with no domestic livestock tenures allocated within the unit.

Wide Ranging Carnivores

1.	Maintain sufficient seasonal habitat to retain grizzly bear populations.	1.1	Initiate an inventory project to identify critical habitat, foraging areas and denning sites
		1.2	Complete the Wigwam River/Lodgepole Creek/Leach Creek complex Grizzly Bear Inventory Project.
2.	Ensure existing wolf and cougar population are maintained or enhanced.	2.1	Maintain sufficient prey habitat, and, therefore, adequate prey populations.

Fisheries

1.	Maintain wild fish stocks and habitat for regionally significant Bull Trout.	1.1	In establishing priorities for watershed assessments and for managing Bull Trout through application of the appropriate components of the FPC, consideration should be given to the Wigwam River watershed.
2.	Maintain wild fish stocks and habitats for Cutthroat and Bull Trout in the Wigwam River	2.1	Undertake an assessment of fish populations and habitat in the Wigwam system.
		2.2	Review habitat conservation and current management strategies.
		2.3	Explore possible use of access management to limit harvest.

Gilnockie
C-S07

Objective	Strategy	Landscape Units

General Biodiversity

1.	Retain forest and grassland ecological elements and processes, including species richness, distribution and diversity at a moderate risk.	1.1	Maintain forage opportunities for wildlife within the alpine grasslands west of Bloom Creek and north of Ward Creek, with no domestic livestock tenures allocated within these areas.
2.	Maintain regional connectivity corridor to ensure north-south connection within the Kootenay River	2.2	Apply the connectivity guidelines within the regional

	System and east-west across the East Kootenay Trench, to support the Gilnockie Provincial Park, contribute to ecosystem representation (MCR - ICHmk1, ESSFwm) and to serve as habitat linkage for the seasonal migration of the international Yahk-Cabinet grizzly bear population.		connectivity corridor as indicated in Chapter 3, section 3.3.
3.	Retain attributes for old growth dependent species and fur bearers.	**3.1**	In establishing priorities for Old Growth Management Areas, consideration should be given to Western Larch.
4.	Maintain the integrity of alpine environments.	**4.1**	Address alpine habitat through access management, as required, in conformance with the Access Management guidelines, Chapter 3, section 3.12.

Wide Ranging Carnivores

1.	Maintain sufficient seasonal habitat to retain the existing grizzly bear population.	**1.1**	Maintain planning cooperation with the United States through the Yahk Cabinet Grizzly Research Project.

Fisheries

1.	Maintain the sensitive riparian features associated with Ward and Gilnockie Creeks.	**1.1**	No domestic livestock tenures to be allocated within these areas.

Upper Meachen Creek
C-S08

Objective	Strategy	Landscape Units

Heritage/Culture

See regional objectives and strategies, Chapter 2.

General Biodiversity

1.	Maintain regional connectivity corridor between the East and west Kootenays through Lockhart and Kanuko Creeks, to contribute to ecosystem representation (SCM - ESSFdk, Msdk) to serve as habitat linkage for the seasonal migration of mountain caribou and to support Kanuko Provincial Park.	**1.1**	Apply the connectivity guidelines within the regional connectivity corridor as indicated in Chapter 3, section 3.3.
2.	Retain attributes for old growth dependent species and fur bearers.	**2.1**	In establishing priorities for Old Growth Management Areas, consideration should be given to the unit.

Premier Ridge, Diorite Creek-Premier Face
C-S09*

***Note: C-S09 is an extension of I-S12**

Objective	Strategy	Landscape Units

Recreation

1.	Maintain a range of recreation opportunities towards the semi primitive end of the Recreation Opportunity Spectrum.	**1.1**	If industrial roading occurs within the unit, manage for semi primitive motorized in the short term, with a longer term objective of managing for semi primitive non motorized through road deactivation and access management following resource development.	C-29 I-4

General Biodiversity

1.	Retain grassland ecological elements and processes, including species richness, distribution and diversity at a low risk.	**1.1**	Maintain the existing access management program on Premier Ridge. Initiate access management and road/trail deactivation and rehabilitation in accordance with the access management guidelines (Chapter 3, section 3.12).	C-33
		1.2	New or existing Christmas tree permits will be reviewed with the goal of concentrating intensive management in the most suitable sites within the permit area.	C-33
2.	Maintain the regional connectivity corridor between the Top of the World Provincial Park and the Purcell Wilderness Conservancy to serve as habitat linkage for the seasonal migration ungulates.	**2.1**	Apply the connectivity guidelines within the regional connectivity corridor as indicated in Chapter 3, section 3.3.	

Wide Ranging Carnivores

1.	Ensure the existing cougar and wolf populations are maintained or enhanced.	**1.1**	Maintain sufficient prey habitat, and, therefore, adequate prey populations.

Bull River
C-I01

Objective	Strategy	Landscape Units

Commercial Tourism

1.	Maintain and enhance opportunities for resorts and commercial backcountry recreation.	**1.1**	Provide, as necessary, for expansion of Fernie and Sparwood ski areas, and for expansion of CBR activities at Island Lake Lodge. These actions will be subject to consideration of conservation values, municipal and regional planning, and the provincial land use charter and goals through a referral process.

Recreation

1.	Maintain a range of recreation opportunities from roaded resource land to semi primitive	**1.1**	Maintain existing road accessible campsites along the Bull River.	C-26 C-

	non motorized.			27 C-28
		1.2	Manage the Bull River as a Backcountry River Corridor consistent with the Backcountry Recreation Guidelines (Chapter 3, section 3.9) Apply for non motorized use restriction, upstream of the Aberfeldie Reservoir through Transport Canada.	C-26 C-27 C-28
		1.3	No permanent road access within 500m of the river unless it is less environmentally damaging to construct the road within this 500m zone. New roads constructed for resource development and not needed for ongoing resource management, to be deactivated upon conclusion of resource development.	C-26 C-27 C-28

General Biodiversity

1.	Retain forest and grassland ecological elements and processes, including species richness, distribution and diversity at a low risk.	**1.1**	Quinn Creek should be designated as a Sensitive Area under the FPC.	C-27
2.	Maintain regional connectivity corridor between the Wigwam, Top of the World Provincial Park and the Elk and bull river watersheds (linking SRMZ units C-S01, C-S02 and C-S06), to contribute to ecosystem representation (ICHmk1, ICHmw2) and to serve as habitat linkage for the seasonal migration of ungulates.	**2.1**	Apply the connectivity guidelines within the regional connectivity corridor as indicated in Chapter 3, section 3.3.	
3.	Retain attributes for old growth dependent species and fur bearers.	**3.1**	In establishing priorities for Old Growth Management Areas, consideration should be given to the Bull River watershed.	
4.	Maintain the integrity of alpine environments.	**4.1**	Address alpine habitat through access management, as required, in conformance with the Access Management guidelines, Chapter 3, section 3.12.	

Ungulates

1.	Maintain the abundance of elk, moose, mule deer, white-tailed deer, Rocky Mountain Goats and Rocky Mountain Bighorn Sheep	**1.1**	Maintain suitable summer and winter habitats and minimize wildlife displacement by developing an access management plan to ensure compatible activity and uses in the area

	within the sustainable carrying capacity of their habitat.		in accordance with the Access Management Guidelines (Chapter 3, section 3.12).
		1.2	Sustain early seral ungulate habitat by initiating controlled fires.
		1.3	The mineral lick at Sulpher Creek should be designated as a Sensitive Area under the FPC.

Wide Ranging Carnivores

1.	Maintain sufficient seasonal habitat to retain the existing grizzly bear population.	**1.1**	Sustain high productivity berry patches by: a) initiating controlled fires b) no utilization of herbicides in high productivity berry patch areas.
2.	Ensure the existing wolf populations utilizing the Bull River drainage and the existing lynx populations within draft Landscape Unit # 27 are maintained or enhanced.	**2.1**	Maintain sufficient prey habitat and, therefore, adequate prey populations.

Fisheries

1.	Maintain breeding and nesting opportunities for Harlequin Ducks on the Bull River.	**1.1**	Initiate an inventory of breeding and nesting habitat needs
2.	Maintain riparian zone attributes within.	**2.1**	Riparian areas associated with Bull River and Sand Creek are priority areas for identification of appropriate management regimes for livestock and wildlife.
3.	Maintain wild fish stocks and habitats for Cutthroat Trout in the Bull River.	**3.1**	Assess fish populations and habitats and document the fishery.
		3.2	Review current management strategies.
		3.3	Through consultations with BC Hydro, ensure habitat impacts are minimized.
		3.4	Explore regulation changes which could be used to limit overfishing.
4.	Maintain wild fish stocks and habitats for Cutthroat and Bull Trout in the Elk River.	**4.1**	Undertake a review of angling guides on the Elk River to address potential overcrowding.
		4.2	Review existing management and habitat conservation strategies.
		4.3	Undertake an assessment of fish and fish habitat.
		4.4	Develop a restoration of fish and fish habitat.

Limestone Range
C-I02

Objective	Strategy	Landscape Units

Recreation

1.	Maintain a range of recreation opportunities from natural to semi primitive non motorized.	1.1	Manage the Elk River as a Backcountry River Corridor consistent with the Backcountry Recreation Guidelines (Chapter 3, section 3.9). Apply for non motorized use restriction through Transport Canada.	C-22
		1.2	No permanent road access within 500m of the river unless it is less environmentally damaging to construct the road within this 500m zone, existing Forest Service Roads and public highways excepted. New roads constructed for resource development and not needed for ongoing resource management, to be deactivated upon conclusion of resource development.	C-22

General Biodiversity

1.	Maintain regional connectivity corridor along the Continental Divide and between the Height of the Rockies Park to the Wigwam, to contribute to ecosystem representation (BRR - ESSFdk), to serve as habitat linkage for the seasonal migration of Rocky Mountain Big Horn Sheep and elk and to support Elk Lakes Provincial Park.	1.1	Apply the connectivity guidelines within the regional connectivity corridor as indicated in Chapter 3, section 3.3.
2.	Retain attributes for old growth dependent species and fur bearers.	2.1	In establishing priorities for Old Growth Management Areas, consideration should be given to old growth Spruce within the headwaters of the Elk River.
3.	Maintain the integrity of alpine environments.	3.1	Address alpine habitat through access management, as required, in conformance with the Access Management guidelines, Chapter 3, section 3.12.

Ungulates

1.	Maintain the abundance of elk, moose, Rocky Mountain bighorn sheep, and Rocky Mountain goats within the sustainable carrying capacity of their habitat.	1.1	Conserve summer habitat and minimize wildlife displacement and habitat degradation in the alpine grasslands by developing an access management plan to ensure compatible activity and uses, particularly as it relates to ATV recreational activity, in accordance with the access management guidelines (Chapter 3, section 3.12).

Wide Ranging Carnivores

1. Maintain sufficient habitat to ensure grizzly bear populations are maintained or enhanced.	**1.1** Complete the Upper Elk River Grizzly Bear Inventory Project.

Fisheries

1. Maintain wild fish stocks and habitat for West Slope Cut Throat Trout.	**1.1** In establishing priorities for watershed assessments, consideration should be given to the Elk River headwaters.

Sage/Commerce Creeks
C-I03

Objective	**Strategy**	**Landscape Units**

General Biodiversity

1.	Maintain regional connectivity corridor along the continental Divide and between the Flathead watershed and Waterton and Glacier National Parks, to contribute to ecosystem representation (Brr - Msdk).	**1.1**	Apply the connectivity guidelines within the regional connectivity corridor as indicated in Chapter 3, section 3.3.
2.	Maintain the integrity of alpine environments.	**2.1**	Address alpine habitat through access management, as required, in conformance with the Access Management guidelines, Chapter 3, section 3.12.

Ungulates

1.	Maintain the abundance of Rocky Mountain Goats, Rocky Mountain Bighorn Sheep, elk, moose and mule deer within the sustainable carrying capacity of their habitat.	**1.1**	Maintain summer habitat and minimize wildlife displacement and habitat degradation by developing an access management plan to ensure compatible activity and uses in the area in accordance with the Access Management guidelines (Chapter 3, section 3.12).
		1.2	Maintain forage opportunities for wildlife with no domestic livestock tenure allocated within the unit.

Headwaters and West Side of the Flat Head River
C-I04

Objective	**Strategy**	**Landscape Units**

Recreation

1.	Maintain a range of recreation opportunities from roaded resource land to semi primitive non motorized.	**1.1**	Manage Ptolemy Plateau for semi primitive non motorized recreation.	C-19
		1.2	Recommend Ptolemy Plateau be designated a Sensitive Area under the FPC.	C-19
		1.3	In cooperation with the Alberta Forest Service, develop and implement a management plan for the Ptolemy Plateau.	C-19

2.	Maintain non-commercial public opportunities for backcountry recreation for the Ptolemy Plateau area.	**2.1**	Commercial Backcountry Recreation applications will be reviewed for their ability to maintain or enhance non-commercial public backcountry recreation opportunities.	C-19

General Biodiversity

1.	Retain forest and rangeland ecological elements and processes, including species richness, distribution and diversity at a moderate risk.	**1.1**	Priorities for implementation of the Fire-Maintained Ecosystem Restoration Guidelines (Chapter 3, section 3.10) exist in the the Wigwam Flats.
		1.2	Maintain the existing access management program in the Wigwam Flats-Mount Broadwood area.
2.	Retain attributes for old growth depend species and fur bearers as well as critical attributes for ecosystem representatives.	**2.1**	In establishing priorities for Old Growth Management Areas, consideration should be given to Spruce and Balsam in the tributaries of Lodgepole and Ram Creeks.
3.	Ensure habitat requirements for red and blue listed species are achieved.	**3.1**	Initiate an inventory project for the Tailed Frog.
		3.2	The Tailed Frog should be designated as identified wildlife species under the FPC.

Ungulates

1.	Maintain the abundance of elk, mule deer, Rocky Mountain Goats and Rocky Mountain Bighorn sheep within the sustainable carrying capacity of their habitat.	**1.1**	Maintain foraging opportunities for wildlife with no domestic livestock tenures allocated within the unit.
		1.2	The mineral lick in McClatchie Creek should be designated as a sensitive Area under the FPC.

Fisheries

1.	Maintain wild stocks and habitat for Bull Trout.	**1.1**	In establishing priorities for watershed assessments and for managing Bull Trout through application of the appropriate components of the FPC, consideration should be given to the Wigwam River.
2.	Rebuild wild fish stocks and habitats for Cutthroat and Bull Trout in the Flathead River.	**2.1**	Restore fish habitat and identify strategies to offset impacts of resource development.
		2.2	Cooperate with the State of Montana on monitoring stock status of Bull Trout.
		2.3	Assess current status of fish populations and fish habitat.
		2.4	Review current management strategies.

3.	Maintain wild fish stocks and habitats for Cutthroat and Bull Trout in the Wigwam	**3.1**	Undertake an assessment of fish populations a

	River.		and habitat in the Wigwam system.
		3.2	Review habitat conservation and current management strategies.
		3.3	Explore possible use of access management to limit harvest.

Rocky Mountain Trench
C-I05

Objective	Strategy	Landscape Units

Agriculture

1.	Maintain opportunities for increased or improved agriculture activity.	1.1	Potential agricultural opportunities, particularly within the Jaffray polygon, identified by individuals through the Range Plan process under the FPC or proponent application to the appropriate agencies, will be reviewed and evaluated by an inter-agency government process which will involve affected parties and the public (yet to be discussed by KBLUP technical team).	C-34

Commercial Tourism

1	Maintain and enhance opportunities for resorts and commercial backcountry recreation.	1.1	Provide, as necessary, for expansion of the Kimberley ski area. These actions will be subject to consideration of conservation values, municipal and regional planning, and the provincial land.

Access Management

1.	Ensure the range of objectives and strategies are integrated throughout the unit, particularly as they relate to access for proposed development.	1.1	All proposals for new road development or expansions will be evaluated through either: • an enhanced referral process as described in the Access Management Guidelines, Chapter 3, section 3.12, or • special measures which, because of imminent development, require immediate attention.

Recreation

1.	Maintain a range of recreation opportunities from natural to semi primitive non motorized.	1.1	Manage the St. Mary's River as a Backcountry River Corridor consistent with the Backcountry Recreation Guidelines (Chapter 3, section 3.9). Apply for non motorized use restriction through Transport Canada.	C-32
		1.2	No permanent road access within 500m of the river, existing Forest Service Roads and public highways exempted. New roads constructed for resource development, and not required for ongoing resource management to be deactivated upon conclusion of resource development.	C-32

2.	Maintain the integrity of the historic Dewdney Trail.	**2.1**	From Fort Steele to Wildhorse Creek, manage identifiable portions of the Dewdney Trail, as a Heritage Trail, consistent with the interagency agreement for Heritage Trails.	C-33

General Biodiversity

1.	Retain grassland and forest ecological elements and processes, including species richness, distribution and diversity at a low risk.	**1.1**	Priorities for implementation of the Fire-Maintained Ecosystem Restoration Guidelines (Chapter 3, section 3.10) exist on the Newgate, Gold Creek-Plumbob, Grasmere, Power Plant, Lewis-Wolf, St. Mary's Prairie and Cherry TaTa Range Units.	C-37 C-35 C-33 C-32
		1.2	Maintain existing access management program in the Power Plant Range Unit and on the Sheep Mountain portion of the Waldo Range Unit. Initiate access management and road/trail deactivation and rehabilitation in accordance with the access management guidelines (Chapter 3, section 3.12). Priority areas for access management exist on the Newgate, Grasmere, Rampart-Mayook-Baker, Cranbrook-Fort Steele and Cherry-Ta Ta Range Units.	C-33 C-34 C-37 C-35 C-36 C-30 C-32
		1.3	New or existing Christmas tree permits will be reviewed with the goal of concentrating intensive management in the most suitable sites within the permit area.	
		1.4	Complete the third year of the Enhancement Area Identification Project funded by the CBFWCP to identify enhancement opportunities which will consider the needs of all species.	
2.	Maintain the regional connectivity corridor for the north-south	**2.1**	Apply the connectivity guidelines within the regional connectivity corridor as	

	connection, within the East Kootenay Trench, and east-west between SRMZ units C-S06 and C-S07, to contribute to ecosystem representation (EKT - Ppdh2, IDFdm2, and MCR and EKT - IDFdh2, Ppdh2, MSdk, ESSFdk) and to serve as habitat linkage for the seasonal migration of ungulates.		indicated in Chapter 3, section 3.3.	
		2.2	Human settlement plans, including Official Community Plans, to address and reflect regional connectivity.	
3.	Ensure habitat requirements for red and blue listed and regionally significant species are achieved.	**3.1**	Prepare and implement a species recovery plan for Sharp-Tailed Grouse re-introduction and habitat restoration. Complete the Sharptail Grouse Transplant Feasibility Project funded by the CBFWCP to evaluate suitable sites for re-introduction.	C-35 C-37

Objective		Strategy		Landscape Units
		3.2	Complete the Coeur d'Alene Salamander Inventory Project in the Kootenay River Valley, south of Fort Steele.	
		3.3	Support the Small Mammals Project funded by the CBFWCP to develop needed information on the status of the red-tailed chipmunk, the *ruficaudus* subspecies, the Selkirk least chipmunk and the Creston Northern Pocket Gopher.	
		3.4	Complete the Upper Kootenay Bat Survey funded by the CBFWCP, determine red and blue listed species status, and identify potential enhancement projects.	
		3.5	Support the Painted Turtle Project funded by the CBFWCP to explore alternatives to reduce highway crossing mortality. Construct culvert underpasses and alternate nest sites away from the roadways.	

Ungulates

1.	Maintain the abundance of regionally significant elk, moose, mule and white-tailed deer and Rocky Mountain Bighorn Sheep within the sustainable carrying capacity of their habitat.	**1.1**	Complete the Rocky Mountain Trench Elk and Mule Deer Inventory Project to assess the effects of forest ingrowth on forage quantity and quality.

Wide Ranging Carnivores

1.	Ensure the existing wolf and cougar populations are maintained or enhanced.	**1.1**	Maintain sufficient prey habitat and, therefore, adequate prey populations.

Fisheries

1.	Maintain wild fish stocks and habitat for Bull Trout.	**1.1**	In establishing priorities for watershed assessments and for managing Bull Trout through application of the appropriate components of the FPC, consideration should be given to the Kootenay and St. Mary's Rivers.

2.	Ensure no net loss of wetland habitat.	**2.1**	Implement a moratorium on infilling within the Kootenay River system.
		2.2	Maintain cottonwood habitat through conservation easement plan with private landowners along the Kootenay River.
3.	Maintain riparian zone attributes.	**3.1**	Riparian areas associated with Sand and Gold Creeks are priority areas for identification of appropriate management regimes for livestock and wildlife.

Objective	Strategy	Landscape Units
4. Conserve the integrity of the Herron Rookery at Horseshoe Lake.	**4.1** The Herron Rookery at Horseshoe Lake should be designated as a Sensitive Area under the FPC.	
5. Rebuild wild fish stocks and habitat for Bull and Cutthroat Trout and Burbot in the Kootenay River, upstream of Lake Koocanusa.	**5.1** Undertake population and habitat assessments to develop a management strategy.	
	5.2 Review habitat conservation strategies in areas where forest harvesting occurs.	
	5.3 Document characteristics of existing fishery.	
	5.4 Document the life history of sport fish.	
6. Maintain wild fish stocks and habitats for existing species in Lake Koocanusa.	**6.1** Establish formal working relationships and cooperative management strategies with United States agencies to address common fisheries issues.	
	6.2 Initiate a monitoring program to detail stock status of various sportfish stocks.	
	6.3 Participate in working groups that review reservoir operations, in particular water levels which potentially adversely affect fish stocks and habitat.	
7. Maintain wild fish stocks and habitats for Cutthroat Trout in the Bull River.	**7.1** Assess fish populations and habitats and document the fishery.	
	7.2 Review current management strategies.	
	7.3 Through consultations with BC Hydro, ensure habitat impacts are minimized.	
	7.4 Explore regulation changes which could be used to limit overfishing.	
8. Maintain wild fish stocks and habitats for Cutthroat and Bull Trout in the Elk River.	**8.1** Undertake a review of angling guides on the Elk River to address potential overcrowding.	
	8.2 Review existing management and habitat conservation strategies.	
	8.3 Undertake an assessment of fish and fish habitat.	

Objective	Strategy	Landscape Units
	8.4 Develop a restoration of fish and fish habitat.	
9. Maintain wild fish stocks and habitats for Cutthroat Trout in the St. Mary River.	**9.1** Assess fish populations and habitat.	
	9.2 Review habitat conservation strategies.	
	9.3 Document the sport fishery.	
	9.4 Identify potential impediments to production of fish stocks.	
	9.5 Document the life histories of the major sportfish.	
	9.6 Identify methods to improve public access for angling.	
10. Maintain wild fish stocks and habitats for Cutthroat and Bull Trout in the Wigwam River.	**10.1** Undertake an assessment of fish populations and habitat in the Wigwam system.	
	10.2 Review habitat conservation and current management strategies.	
	10.3 Explore possible use of access management to limit harvest.	

Southern Purcell Mountains
C-106

Objective	Strategy	Landscape Units
Agriculture		
1. Maintain opportunities for increased or improved agriculture activity.	**1.1** Potential agricultural opportunities, particularly within the Mathew-Mark-Matter Creek, St. Mary's Valley, Lower Perry Creek, Upper Moyie Bloom Creek and Lower Moyie polygons, identified by individuals through the Range Plan process under the FPC or proponent application to the appropriate agencies, will be reviewed and evaluated by an inter-agency government process which will involve affected parties and the public.	C-8 C-32 C-2 C-10 C-1
Recreation		
1. Maintain a range of recreation opportunities from	**1.1** Downstream of Moyie Lake, apply for a non motorized use restriction through Transport Canada.	C-1

	roaded resource land to semi primitive non motorized.			
2.	Maintain the integrity of the St. Mary River.	**2.1**	Manage the St. Mary River as a Backcountry River Corridor consistent with the Backcountry Recreation Guidelines (Table 1.2,) Apply for non motorized use restriction through Transport Canada.	C-2 C-4 C-6 C-7 C-8
		2.2	No permanent road access within 500 m of the river unless it is less environmentally damaging to construct the road within this 500m zone, existing Forest Service Roads and public highways excepted. New roads constructed for resource development and not needed for ongoing resource management, to be deactivated upon conclusion of resource development.	C-2 C-4 C-6 C-7 C-8

General Biodiversity

1.	Retain forest and grassland ecological elements and processes, including species richness, distribution and diversity.	**1.1**	Angus Creek should be designated as a Sensitive Area under the FPC.	C-4
		1.2	Support the Nestbox Monitoring Project funded by the CBFWCP for cavity nesting ducks.	
2.	Maintain the regional connectivity corridor between Mathew/Mark, Buhl, Crawford, St. Mary and Goat River drainages to create a link between Gilnockie Park and SRMZ unit C-S07, to contribute to ecosystem representation (ICHmk1, MCR - ESSFdk and MSdk) to serve as habitat linkage for the seasonal north-south migration of mountain caribou and to support Gilnockie Provincial Park.	**2.1**	Apply the connectivity guidelines within the regional connectivity corridor as indicated in Chapter 3, section 3.3.	

3.	Retain attributes for old growth dependent species and fur bearers.	**3.1**	In establishing priorities for Old Growth Management Areas, consideration should be given to Whitebark Pine in the Angus Creek area.
4.	Ensure that habitat requirements for red and blue listed and regionally significant species are achieved.	**4.1**	Complete the Coeur d'Alene Salamander Inventory Project in the Moyie River Valley.
		4.2	Complete the Upper Kootenay Bat Survey funded by the CBFWCP. Determine red and blue listed species status and identify potential enhancement projects.

Fisheries

1.	Maintain wild fish stocks and habitat for Bull Trout, Kokanee and West Slope Cut Throat Trout.	**1.1**	In establishing priorities for watershed assessments, consideration should be given to St. Mary's River, Perry, Matter, Hellroaring and Gold Creeks.
		1.2	In establishing priorities for managing Bull Trout through application of the appropriate components of the FPC, consideration should be given to St. Mary's River.
2.	Maintain riparian zone attributes.	**2.1**	Riparian areas associated with Bloom, Caven, gold and Teepee Creeks are priority areas for identification of appropriate management regimes for livestock and wildlife.
3.	Minimize displacement of aquatic species on the Moyie River.	**3.1**	No motorized access on the Moyie River below Moyie Lake.
4.	Rebuild wild fish stocks and habitats for Kokanee in Moyie Lake.	**4.1**	Document recreational fishery and fish life histories.
		4.2	Conserve and rehabilitate stream habitats which may be affected by resource development.
		4.3	Review fish management strategy for the lake.

5.	Maintain wild fish stocks and habitats for Cutthroat Trout in the St. Mary River.	**5.1**	Assess fish populations and habitat.
		5.2	Review habitat conservation strategies.
		5.3	Document the sport fishery.
		5.4	Identify potential impediments to

			production of fish stocks.
		5.5	Document the life histories of the major sportfish.
		5.6	Identify methods to improve public access for angling.

Elk Valley East
C-E01

Objective	Strategy	Landscape Units

Access Management

1.	Within the context of the Coal Enhanced Resource Development Zone designation, ensure the range of objectives and strategies are integrated in the Upper Fording area, particularly as they relate to access for proposed development.	1.1	All proposals for new road development or expansions will be evaluated through either: • an enhanced referral process as described in the Access Management Guidelines, Chapter 3, section 3.12, or • special measures which, because of imminent development, require immediate attention.

Recreation

1.	Within the context of the Coal Enhanced Resource Development Zone, maintain a range of recreation opportunities from roaded resource land to semi primitive non motorized.	1.1	Manage the Elk River as a Backcountry River Corridor consistent with the Backcountry Recreation Guidelines (Table 1.2).	C-22

General Biodiversity

1.	Maintain the regional connectivity corridor between SRMZ unit C-S01 and Elk Lakes Provincial Park to serve as habitat linkage for the seasonal migration of ungulates and to support Elk Lakes Provincial Park.	1.1	Apply the connectivity guidelines within the regional connectivity corridor as indicated in Chapter 3, section 3.3.
2.	Maintain riparian zone attributes.	2.1	Identify appropriate management regimes for livestock and wildlife for the riparian areas associated with Alexander Creek.
3.	Protect and enhance rangeland features.	3.1	Define Desired Plant Communities (DPC) and the means to achieve them.
		3.2	Develop and implement an access management plan for road and trail deactivation within the context of the Coal ERDZ designation for the unit.

4.	Retain attributes for old growth dependent species and fur bearers.	**4.1**	Complete the Elk Valley Riparian Assessment Project funded by the CBFWCP to survey riparian habitat. Develop a riparian rehabilitation plan.

Ungulates

1.	Maintain the abundance of elk, moose, mule deer, white-tailed deer, Rocky Mountain Goats and Rocky Mountain Bighorn Sheep within the sustainable carrying capacity of their habitat.	**1.1**	Explore options for managing moose winter range on private lands within riparian habitats including: a) conservation easements with private land owners b) potential land purchase of class 1 winter range.

Fisheries

1.	Maintain wild fish stocks and habitats for Cutthroat and Bull Trout in the Elk River.	**1.1**	Undertake a review of angling guides on the Elk River to address potential overcrowding.
		1.2	Review existing management and habitat conservation strategies.
		1.3	Undertake an assessment of fish and fish habitat.
		1.4	Develop a restoration of fish and fish habitat.

Appendix A: Community Watersheds

Note: as the list of Community Watersheds under the Forest Practices Code will evolve over time, this list represents existing community watersheds as of September, 1996. All other watersheds that are used for domestic water purposes are classified as Domestic Watersheds (see Chapter 3, section 3.7).

Cranbrook S-01

Water Source Community/Water Users Organization

Boivin Creek District of Elkford

Cummins Creek District of Sparwood

Cranbrook I-01

Water Source Community/Water Users Organization

Boardman Creek Fernie Snow Valley Ski Ltd.

Boivin Creek District of Elkford

Cummins Creek District of Sparwood

Fairy Creek City of Fernie

Cranbrook I-05

Water Source Community/Water Users Organization

Blavatsky Creek McDonald Ranch

Joseph Creek City of Cranbrook

Reserve Tobacco Plains Indian Band

Kimberley Creek City of Kimberley

Cranbrook I-06

Water Source Community/Water Users Organization

Joseph Creek City of Cranbrook

Kimberley Creek City of Kimberley

Glencairn Creek Moyie Improvement District

Gold Creek City of Cranbrook

Mark Creek City of Kimberley

Matthew Creek City of Kimberley

Appendix B Protected Areas

The following is a brief description of the new provincial parks that are located within the Cranbrook Forest District. As well, there is a statement of management intent which defines the proposed management emphasis for the area. The new provincial parks will be managed in accordance with the general management direction outlined in Chapter 4. BC Parks will be undertaking a planning process to develop Park Masterplans for each of the new provincial parks. There will be opportunities for public input and review of the Park Masterplans. An indication of planning priority for each of the new parks is identified in Chapter 4.

Akamina-Kishinena Provincial Park

10,921 hectares

The new Akamina-Kishinena Provincial Park is located in the extreme south-east corner of the province, adjacent to both Alberta's Waterton Lakes National Park and Montana's Glacier National Park.

The Protected Areas Strategy ranked this area as the number one protection priority in the entire Kootenay region. The area is a core area of critical importance as a connector between Waterton Lakes National Park and Glacier National Park in the United States. The creation of the Akamina-Kishinena provincial park contributes to the long-term viability of wildlife populations, in particular those that require vast habitats, such as grizzly bears and wolves. Such wildlife populations are shared by British Columbia, Alberta and the United States.

As a result of the important natural values found within the Akamina-Kishinena provincial park, the management emphasis will be on conservation.

Elk Lakes Provincial Park

17,245 hectares

A s a result of the government decision on new protected areas, the Elks Lake Provincial Park was extended to included in the Elks Lakes Recreation Area. The area is located 60 kilometres north of Sparwood at the headwaters of the Elk River and Cadorna Creek. As a result of this addition to the provincial parks system, there is a link both to the new Height of the Rockies Provincial Park and the Peter Lougheed Provincial Park in Alberta.

Given its former status as a recreation area, the new addition to Elks Lakes Provincial Park obviously contains important recreation features. The area is a popular destination due to its location on the Alberta/B.C. boundary and its challenging terrain. The high wilderness recreation values include spring, summer and fall use for hiking, wildlife viewing, horseback riding, mountaineering, camping hunting and fishing. There is also some winter use from the Peter Lougheed Provincial Park in Alberta.

The former recreation area also includes very high wildlife values. The area is important habitat for a variety of species, including wolf, grizzly bear, cutthroat trout, mountain goat, elk and moose. It contains one of the largest mountain goat herds and densest concentrations of that species found anywhere in North America. The riparian habitat along Cadorna Creek is very important for a number of species. The river support an important sport fishery for cutthroat trout.

As a result of the existence of both significant recreation values, as well as very high wildlife values, the management emphasis will be to seek balance between conservation and recreation.

Gilnockie Provincial Park

2,822 hectares

The new Gilnockie Provincial Park is located 60 kilometres south of Cranbrook, close to the Montana border. This is an area of low mountains with only isolated areas of subalpine grassland. It is the last remaining unroaded area in the Yahk-Moyie area.

The Gilnockie Provincial Park contains some of the oldest larch and fir stands in the region, a forest type that is quite rare in the East Kootenay. As well, the subalpine grasslands in this area are a unique type. The park provides excellent habitat for elk and supports white-tailed deer, mule deer, moose and grizzly bear. The creation of the new park provides for connectivity for the movement of wildlife south across the border into Montana.

As a result of the important natural values, the management emphasis for Gilnockie Provincial Park will be on conservation.

Height of the Rockies Provincial Park

53,964 hectares

The new Height of the Rockies Provincial Park comprises a large part of the what was the Height of the Rockies Wilderness Area, running along the height of land adjacent to the Alberta border in both the Cranbrook and Invermere Forests Districts. It also borders the newly extended Elk Lakes Provincial Park and creates a linkage with Banff National Park and Peter Lougheed Park in Alberta.

The new provincial park contains very high wildlife values, including the largest concentration of mountain goat in the world. As well, it contains key habitat for grizzly bears, wolves, elk, Rocky Mountain Big Horn Sheep and trophy cutthroat trout.

There are also significant recreational values in the new Height of the Rockies Provincial Park, including important wilderness and backcountry recreation opportunities. The new park contains prehistoric trails and was part of the route of the Palliser expedition and the Overlanders.

As a result of the existence of both significant recreation values, as well as very high wildlife values, the management emphasis will be to seek balance between conservation and backcountry recreation.

Appendix C

Cranbrook: Rationale for size, boundary locations and biodiversity emphasis assignments, as outlined in Chapter 3, section 3.2 of the KBLUP implementation strategy.

Landscape Unit #	Landscape Unit Name	Total Area (ha)	Rationale for Size and Boundary Location	BEO Assignment	Rationale for BEO Assignment
C01	Moyie Lake	30,494	Area of Moyie Lakes and downstream Moyie River which flows	Inter-mediate	Intermediate emphasis is for connectivity along

			southwest. Upper Moyie River (C02) flows northeast, is separated from this unit by a canyon, and is a different natural disturbance type (NDT). Peavine Creek, that drains into Moyie Lake, is included with LU C30 due to similarities in resource management issues and topography. Area already covered by a Local Resource Use Plan (LRUP). High visual quality concerns from Highway 3. Some high wildlife habitat values. Mostly ESSFwm, ICHmw2, and ICHmk1 with some MSdk and IDFdm2.		western edge of District, some red and blue listed species, important riparian habitats, winter range, and high elevation grassland habitat. It is also compatible with the high visual quality objectives set for the area in the Moyie Corridor LRUP.
C02	Perry - Moyie	53,113	Comprised of upper Moyie River and Perry Creek. High concern about caribou. Contains KBLUP SRMZ which approximates ESSFdk line. Contains some KBLUP ERDZ designation. Mostly ESSFdk and MSdk, some ESSFdk-p and IDFdm2.	High for ESSFdk Low for all other biogeo-climatic sub-zones and variants	High emphasis in ESSFdk is primarily for caribou habitat concerns and for connectivity along western edge of District. The low emphasis areas in the other biogeoclimatic subzones and variants are important timber producing areas with good productivity, reasonable terrain, and close to milling facilities.
C03	Lamb Creek	12,993	Entire Lamb Creek drainage except for small area east of scarp above Moyie	Inter-mediate	Intermediate emphasis is for connectivity along western edge of

			Lake.Different NDT from LU C02. This area is not covered by Moyie Corridor LRUP. Some concerns re caribou. Entirely SBFEP operating area. ESSFwm and ICHmw2.		District. ESSFwm and ICHmk1 representation and for caribou habitat concerns. Lamb Creek is hydrologically important for the kokanee fishery in Moyie Lake.

Landscape Unit #	Landscape Unit Name	Total Area (ha)	Rationale for Size and Boundary Location	BEO Assignment	Rationale for BEO Assignment
C04	Hellroaring - Meachen	40,993	The area drained by Angus, Hellroaring, and Meachen Creeks. High concern about caribou. Contains KBLUP SRMZ which approximates ESSF line. Mostly ESSFwm-p, ESSFwm, and ICHmw2, some ICHmk1.	High for ESSF-wm Low for all other biogeo-climatic sub-zones and variants	High emphasis in the ESSFwm is primarily for caribou habitat concerns and for connectivity along western edge of District. Hellroaring and Angus Creeks provide important spawning habitat for Western Cutthroat Trout. The low emphasis areas in the other biogeoclimatic subzones and variants are important timber producing areas with good productivity.
C05	Redding Creek	38,520	The area drained by Redding Creek. ESSFwm-p, ESSFwm, and ICHmw2.	Inter-mediate	Intermediate emphasis is for connectivity along western edge of District, caribou habitat, fisheries, and old growth spruce hemlock values.
C06	Upper St. Mary's	56,182	The area drained by the St. Mary's River and Dewar Creek upstream from their junction. ESSFwm-p, ESSFwm, and	Inter-mediate	Intermediate emphasis is for connectivity along western edge of District and Purcell Wilderness

			ICHmw2.		Conservancy, grizzly habitat, fisheries, and some key old growth values.
C07	White Creek	38,154	The area drained by White, Pyramid, Alki, Argyle, and Denver Creeks. Mostly ESSFwm-p, ESSFwm, and ICHmw2, some ICHmk1.	Inter-mediate	Intermediate emphasis is for connectivity with St. Mary"s Alpine Park. caribou habitat, moderate ungulate winter range values, fisheries, and some key old growth values.
C08	Kimberley Watershed	34,179	Kimberley Community Watershed. Areas drained by Matthew, Mark, Lois, and Kimberley Creeks. All licensed community watersheds. ESSFwm, ESSFwm-p, ESSFdk, ESSFdk-p, ICHmk1, and MSdk, a bit of IDFdm2.	Inter-mediate	Intermediate emphasis is for caribou habitat concerns, community watershed concerns, mule deer winter range at lower elevations, fisheries, and part of regional connectivity corridor.
C09	Yahk River	36,038	Area drained by the Yahk River south into the USA. ICHmw2, ICHmk1, MSdk, ESSFwm, ESSFdk.	Low	Low emphasis provides for timber harvesting opportunities in an area that is mostly operable and is predominated by lodgepole pine stands.
C10	Bloom - Caven	35,728	Area drained by Bloom and Caven Creeks north into lower Gold Creek.. Much of this area is designated by the KBLUP as ERDZ. IDFdm2, MSdk, ESSFdk, ESSFdk-p.	Low	Low emphasis provides for timber harvesting opportunities in an area that is mostly operable and is predominated by lodgepole pine stands.

C11	Teepee Creek	29,334	Area drained by Teepee Creek. Most of this area is designated by the KBLUP as ERDZ. MSdk, ESSFdk, some ESSFwm and a tiny patch of ICHmw2 and ESSFdk-p.	Low	Low emphasis provides for timber harvesting opportunities in an area that is mostly operable and is predominated by lodgepole pine stands.

Landscape Unit #	Landscape Unit Name	Total Area (ha)	Rationale for Size and Boundary Location	BEO Assignment	Rationale for BEO Assignment
C12	Cranbrook Watershed	19,240	Cranbrook Community Watershed. Area drained by Gold and Joseph Creeks, between reservoir on Joseph Creek to diversion on Gold Creek. Upper Gold Creek split from rest of Gold Creek drainage due to diversion into Joseph Creek and therefore being outside the Community Watershed. MSdk, ESSFdk, and a tiny patch of ESSFdk-p.	Inter-mediate	Intermediate emphasis is for community watershed concerns and provides some connectivity between the Rocky Mountain Trench and the Purcells.
C13	Galton Range	20,826	West slopes of Galton Range from USA border to Elk River. Topographically distinct from adjacent bottom of Trench. Includes small community watersheds for Elko, Grasmere, and Tobacco Plains Indian Reserve. High wildlife habitat values. High visual quality concerns. MSdk, ESSFdk and ESSFdk-p with possibly a small strip of IDFdm2.	Inter-mediate in ESSFdk Low for other biogeo-climatic sub-zones and variants	Intermediate emphasis is for retention of high elevation forest habitats, connectivity with the Lizard Range and Wigwam River, and fisheries values in Wigwam River and Elk River below dam. Low emphasis in MSdk and IDFdm2 is because enhancement of forage production

					is a major goal for these areas in this landscape unit. Excellent ungulate winter range (forage) particularly on the Wigwam Flats.
C14	Wigwam River	30,942	Area drained by Wigwam River to confluence with Bighorn Creek. Significant concerns with respect to bull trout. Entire area is SRMZ as per KBLUP. MSdk, ESSFdk, and ESSFdk-p.	High	High emphasis is for fisheries values (spawning habitat for bull trout and cutthroat trout), connectivity, grizzly bear, moose winter range, and biodiversity opportunities due to the currently undeveloped nature of the watershed.
C15	Lodgepole - Bighorn	41,486	Area drained by Lodgepole and Bighorn Creeks. MSdk, ESSFdk, and ESSFdk-p.	Inter-mediate	Intermediate emphasis is for fisheries values (spawning habitat for bull trout and cutthroat trout), connectivity, and grizzly bear.
C16	West Flathead	53,752	West side of Flathead valley from USA border up to and including Shepp Creek. Flathead valley takes a major bend at this point and valley bottom narrows. Includes KBLUP SRMZ designation in a corridor along Flathead River and ERDZ designation in the Shepp Creek area. MSdk, ESSFdk, and ESSFdk-p.	Inter-mediate	Intermediate emphasis is for fisheries values (spawning habitat for bull trout and cutthroat trout), connectivity, and grizzly bear. May contain habitat for rare and endangered species (tailed frog).

Landscape Unit #	Landscape Unit Name	Total Area (ha)	Rationale for Size and Boundary Location	BEO Assignment	Rationale for BEO Assignment
C17	Upper Flathead	32,217	Upper Flathead valley. MSdk, ESSFdk, and ESSFdk-p.	Inter-mediate for Msdk High for all other biogeo-climatic sub-zones and variants	High emphasis is for fisheries values (spawning habitat for bull trout and cutthroat trout), connectivity, and grizzly bear.
C18	East Flathead	71,478	East side of Flathead valley from USA border up to and including St. Eloi Brook. Flathead valley takes a major bend at this point and valley bottom narrows. KBLUP SRMZ designation for all of Kishinena drainage and a large corridor along Flathead River. Contains all of the Crown of the Continent ecosection. MSdk, ESSFdk, and ESSFdk-p.	Inter-mediate	Intermediate emphasis is for fisheries values (spawning habitat for bull trout and cutthroat trout), connectivity, and grizzly bear.
C19	Corbin Creek	41,125	Area drained by Corbin Creek. Predominantly private land, coal mines, and Dominion Government Blocks. Much of this landscape unit has a KBLUP designation of ERDZ. MSdk, ESSFdk, and ESSFdk-p.	Low	Low emphasis for biodiversity reflects the current commitment of this land to commercial forest use and mining.
C20	Alexander - Line	32,803	Area drained by Alexander and Line Creeks. These creeks form a parallel valley system to the Elk River and have high wildlife values and	Inter-mediate	Intermediate emphasis is for connectivity, Rocky Mountain bighorn sheep, alpine grassland habitat, and cutthroat trout.

			active coal mines. Contains some KBLUP ERDZ designation. MSdk, ESSFdk, and ESSFdk-p.		
C21	Fording River	44,199	Area drained by the Fording River and Henrietta Creek. High wildlife values and active coal mines. Contains some KBLUP ERDZ designation. ESSFdk and ESSFdk-p and possibly a bit of MSdk.	Inter-mediate	Intermediate emphasis is for high elevation fescue habitat, Rocky Mountain bighorn sheep, connectivity, fisheries, important old growth spruce values in Chauncey, Ewin and Todhunter Creeks, and biodiversity opportunities in the upper Fording River due to the relatively undeveloped nature of that part of the drainage.
C22	Upper Elk	66,314	Upper Elk Valley to confluence with Forsyth Creek. This is approximately where valley bottom no longer has MSdk Contains protected areas (Elk Lakes and Height of the Rockies) and some KBLUP ERDZ designation. ESSFdk and ESSFdk-p.	Inter-mediate	Intermediate emphasis is for grizzly bear, Rocky Mountain bighorn sheep, connectivity, alpine grassland habitat, cutthroat trout, and recreation values associated with protected areas.

Landscape Unit #	**Landscape Unit Name**	**Total Area (ha)**	**Rationale for Size and Boundary Location**	**BEO Assignment**	**Rationale for BEO Assignment**
C23	West Elk	64,433	West side of Elk valley from (including) Cummins Creek (nearest drainage to change to ICHmk1 in valley bottom, orientation of drainage also changes significantly)to	High	High emphasis is for biodiversity opportunities due to the relatively undeveloped nature of the areas above the developed valley

			(including) Bingay Creek. Includes community watersheds for Sparwood and Elkford. Mostly KBLUP SRMZ designation with a small area of ERDZ for existing coal tenures. MSdk, ESSFdk, and ESSFdk-p.		bottom corridor, grizzly, Rocky Mountain bighorn sheep, the highest density of mountain goats in the District, and important patches of old growth forest in the many cirque basins.
C24	Lower Elk	70,612	Lower Elk valley from Sparwood to Elko (to bottom of Rocky Mountain Trench). Corridor for Highway 3 with high visual quality concerns and a ski hill. Large tracts of private land. ICHmk1, ESSFwm, and ESSFwm-p.	Low	Low emphasis is due to the large tracts of private land dedicated to commercial forest use and mining.
C25	Sand Creek	18,798	Area drained by Sand Creek. Distinctly different, topographically and in biogeoclimatic subzones and variants, from adjacent Rocky Mountain Trench. High visual quality concerns. Biogeoclimatically complex. MSdk, ICHmw2, ESSFwm, ESSFwm-p, ESSFdk, ESSFdk-p, and possibly a tiny bit of IDFdm2.	Intermediate	Intermediate emphasis is for grizzly bear, connectivity, old growth cedar, and important multi-season range for all ungulates resident in the District.
C26	Iron - Sulphur	38,723	Area drained by Iron, Dooley and Sulphur Creeks. Area is important for connectivity between Wigwam River, Galtons, Mountain Broadwood Nature Conservancy and LU C23. ICHmk1, MSdk, ESSFwm, ESSFwm-p, ESSFdk, and ESSFdk-p.	Intermediate	Intermediate emphasis is for connectivity, old growth, grizzly bear, pacific yew, and winter ungulate range in Iron Creek.

C27	Upper Bull	61,941	Area drained by upper Bull River north of (not including) Sulphur Creek and including Quinn Creek. MSdk. ESSFdk. and ESSFdk-p.	Inter-mediate	Intermediate emphasis is for connectivity, grizzly, mountain goats, Rocky Mountain bighorn sheep, residual old growth forest, and fisheries.
C28	Galbraith - Dibble	49,122	Area drained by Galbraith, Tanglefoot, Van, and Dibble Creeks. High wildlife and recreation values. Some KBLUP SRMZ and ERDZ designation. Biogeoclimatically complex. ICHmw2, ICHmk1, MSdk, ESSFwm, ESSFwm-p, ESSFdk, and ESSFdk-p.	Inter-mediate	Intermediate emphasis is for connectivity, grizzly, mountain goats, Rocky Mountain bighorn sheep, summer ungulate range, old growth cedar hemlock, and high recreation values.
Land-scape Unit #	**Landscape Unit Name**	**Total Area (ha)**	**Rationale for Size and Boundary Location**	**BEO Assignment**	**Rationale for BEO Assignment**
C29	Wildhorse - Steeples	32,892	Wildhorse River drainage and west slopes (front side) of Steeples, to edge of the bottom of the Rocky Mountain Trench. High wildlife habitat values. High visual quality concerns. Contains some KBLUP SRMZ designation. MSdk, ESSFdk, ESSFdk-p, and possibly a tiny bit of IDFdm2.	Inter-mediate	Intermediate emphasis is for connectivity, grizzly, mountain goats, Rocky Mountain bighorn sheep, summer ungulate range, and high recreation and visual landscape values.
C30	Cranbrook	46,620	The environs surrounding the City of Cranbrook including Eager Hills, lower Joseph Creek, Peavine Creek, New Lake, Kiakho Creek and Booth Creek. Bounded St. Mary's River on north, Kootenay River on the east, Moyie River on the southwest and divide of Perry Creek on the west.	Low	Low emphasis is due to highly developed nature of this landscape unit, good forest productivity, predominantly lodge pole pine forests, favourable terrain and proximity to mills.

			Contains some KBLUP ERDZ designation. IDFdm2, MSdk, and a bit of ESSFdk.		
C31	Lost Dog - Mather	20,326	Area drained by Lost Dog and Mather Creeks north of highway 95A. Predominantly forested. Mostly ESSFdk and MSdk with a small area of IDFdm2.	Inter-mediate for ESSFdk Low for all other biogeo-climatic sub-zones and variants	Intermediate emphasis is for caribou habitat concerns and connectivity. Low emphasis is due to good forest productivity, predominantly lodge pole pine forests, favourable terrain, and proximity to mills.
C32	St. Mary's Prairie - Hahas Lake	31,726	Rocky Mountain Trench area between Highway 95A, St. Mary's River, and Kootenay River. IDFdm2 and PPdh2.	Low	Low emphasis is due to existing development in much of this area and because enhancement of forage production is a major goal for this landscape unit.
C33	Wasa - Picture Valley	31,790	Rocky Mountain Trench area east of Kootenay River between Wolf Creek and the Bull River. Predominantly IDF. High wildlife winter range values. IDFdm2 and PPdh2.	Inter-mediate for PP Low for all other biogeo-climatic sub-zones and variants	Intermediate emphasis in PP is for representation. Low emphasis is due to existing development in much of this area and because enhancement of forage production is a major goal for this landscape unit.
C34	Jaffray - Baynes Lake	46,821	Rocky Mountain Trench area east of Kootenay River between the Bull River and the Elk River. Includes Pickering Hills and Sheep Mountain. Extremely high wildlife winter range values. IDFdm2 and PPdh2.	Low	Low emphasis is due to existing development in much of this area and because enhancement of forage production is a major goal for this landscape unit.

Landscape Unit #	Landscape Unit Name	Total Area (ha)	Rationale for Size and Boundary Location	BEO Assignment	Rationale for BEO Assignment
C35	Tobacco Plains	20,528	Rocky Mountain Trench area east of Lake Koocanusa between the Elk River and the USA border. Predominantly IDF and PP. High forage values. High recreation values. IDFdm2 and PPdh2.	Low	Low emphasis is due to existing development in much of this area and because enhancement of forage production is a major goal for this landscape unit.
C36	Mayook - Wardner	23,930	Rocky Mountain Trench area west of Kootenay River to height of land on Baker Mountain from Plumbob Creek to Mayook. Topography to south of Plumbob somewhat more subdued. Water quality concerns - many domestic water licences. High visual quality concerns from Highway 3 and rural communities. IDFdm2, MSdk, and ESSFdk.	Intermediate	Intermediate emphasis is for connectivity, representation, domestic water, unique alpine grassland habitats, and high visual concerns.
C37	Linklater - Englishman	34,316	Rocky Mountain Trench area west of Lake Koocanusa to height of land on Mt. Fitzpatrick and along height of land between Gold and Englishmen Creeks from the USA border to Plumbob Creek. High wildlife habitat values. High recreation values along Lake Koocanusa. IDFdm2, MSdk, and ESSFdk.	Low	Low emphasis is due to existing development in much of this area and because enhancement of forage production is a major goal for this landscape unit.
C38	East Elk	31,217	East side of Elk Valley from Michel Creek to the Fording River. Predominantly private land and coal mines. High wildlife habitat values. Some high recreation values at Grave Lake.	Low	Low emphasis is due to the large tracts of private land dedicated to mining and commercial forest use.

			Significant visual landscapes. MSdk, ESSFdk, and ESSFdk-p.		

Back to Table of Contents

•Top •Copyright •Disclaimer •Privacy •Government of British Columbia

W3C HTML 4.01

• Ministry Home • Government of British Columbia
Kootenay Region
Ministry of Sustainable Resource Management
The Minister | News | Search | Reports & Publications | Home | Contacts

Kootenay/Boundary Land Use Plan

Implementation Strategy

Kootenay Inter-Agency Management Committee

June 1997

Appendix 4: Kootenay/Boundary Land Use Plan

Implementation Strategy

Land and Resource Management Direction within the Golden Timber Supply Area

June 1997

CONTENTS

1. Purpose
2. Organization
3. Resource Management Zone Objectives & Strategies

Appendices

A. Protected Areas

B. Rationale for Biodiversity Emphasis Options

1.0 Purpose

This appendix identifies geographically specific land and resource management objectives and strategies for the Golden Timber Supply Area. This site specific management direction covers issues which are:

- not explicitly dealt with through the regional management objectives and strategies (Chapter 2) or the resource management guidelines and accompanying maps (Chapter 3) because they are of local significance, or:
- local interpretations which assist the implementation of the regional management

objectives and strategies (Chapter 2) or the resource management guidelines and accompanying maps (Chapter 3).

2.0 Organization

The material in this appendix is organized and presented according to the KBLUP's land use designation categories. Each of the Resource Management Zones is identified by a reference number. For example, the Resource Management Zones identified as G-S01 indicates that the Resource Management Zone is in the Golden Timber Supply Area (G), is within the special resource management area designation category (S), and is tagged with the identifier number 01.

The site specific management objectives and strategies included in this appendix are listed under headings which correspond to those used in the regional objectives and strategies (Chapter 2). These site specific management objectives and strategies are also tagged to specific landscape units. the Forest Practices Code requires definition of landscape units, including boundaries and management objectives. A landscape unit is a geographic area of land which encompasses a single, or group of, watersheds. Recommended landscape unit boundaries for the Kootenay/Boundary region are identified through section 3.2 of Chapter 3. These areas are generally subunits of Resource Management zones and, in some cases, exist in more than one Zone. The appropriate landscape units are identified in this appendix to assist in translating the management direction into landscape level planning. For further discussion on landscape level planning, please see Chapter 6, section 6.3.

Note: Changes, additions or deletions to the resource objectives and strategies outlined in this Appendix may result from further work at either the regional and/or landscape level. Such changes will be undertaken in a manner consistent with the mechanism for Plan Amendment (Chapter 6, section 6.8) or through subsequent landscape level planning (Chapter 6, section 6.3).

3.0 Resource Management Zone Objectives and Strategies

Upper Wood River
G-S01

Objective	Strategy	Landscape Units
Access Management		
1. Ensure the range of objectives and strategies are integrated throughout the unit, particularly as they relate to access for proposed development.	**1.1** All proposals for new road development or expansions will be evaluated through either: • an enhanced referral process as described in the Access Management Guidelines, Chapter 3, section 3.12, or • special measures which, because of	

			imminent development, require immediate attention.
2.	Manage for remote recreation and conservation values, while allowing resource extraction to proceed.	2.2	Implement road closures and prohibit motorized access for use other than approved industrial activity.
		2.3	Minimize duration of each timber harvest entry, maximize the time between entries and minimize the number of entries.

Recreation

1.	Maintain a range of recreation opportunities towards the semi primitive end of the Recreation Opportunity Spectrum.	1.1	Manage upland areas (inoperable for forestry) for semi primitive non motorized, within the operable forest, manage for semi primitive motorized with road closure upon the conclusion of each harvesting entry.	G-1
2.	Maintain the integrity of the Athabasca Pass Heritage Trail	2.1	Manage identifiable portions of the Athabasca Pass Trail, as a Heritage Trail, consistent with the interagency agreement for Heritage Trails. This SRMZ is a priority for lower level planning which will include further measures for trail management.	G-1
		2.2	Minimize road development in the vicinity of the Athabasca Pass Trail.	G-1
		2.3	Apply Backcountry Management Guidelines for Heritage Trails (Chapter 3, section 3.9) with the following addition. Visuals: Logging may be discernible, but not clearly evident from the trail (this does not include broad viewpoints). Class 2, (Chapter 3, section 3.9) Visual Management Guidelines will be applied from established broad viewpoints.	G-1

General Biodiversity

1.	Maintain the regional connectivity corridor between Jasper National Park and the Columbia River system, to contribute to ecosystem representation (ESSFwc2), to serve as habitat linkage for the seasonal migration of grizzly bears and mountain caribou, and to support Cummins Park.	1.1	Apply the connectivity guidelines within the regional connectivity corridor as indicated in Chapter 3, section 3.3.

Ungulates

1.	Maintain the abundance of moose within the sustainable carrying capacity of their habitat.	1.1	Maintain the priority summer habitat within this unit through application the biodiversity emphasis under the FPC.

Fisheries

1.	Maintain wild fish stocks and habitat for Kokanee.	**1.1**	In establishing priorities for watershed assessments, consideration should be given to the lower Wood River.	

Windy Creek, Mt. Sir Sandford and the Adamants
G-S02

	Objective		Strategy	Landscape Units
Access Management				
1.	Ensure the range of objectives and strategies are integrated within the Windy and Austerity Creek areas, particularly as they relate to access for proposed development.	**1.1**	All proposals for new road development or expansions will be evaluated through either: • an enhanced referral process as described in the Access Management Guidelines, Chapter 3, section 3.12, or • special measures which, because of imminent development, require immediate attention.	
2.	Manage for remote recreation and conservation values, while allowing resource extraction to proceed.	**2.1**	Implement road closures and prohibit motorized access for use other than approved industrial activity.	
		2.2	Minimize duration of each timber harvest entry, maximize the time between entries and minimize the number of entries.	
Recreation				
1.	Maintain a range of recreation opportunities towards the semi primitive end of the Recreation Opportunity Spectrum.	**1.1**	Manage upland areas (inoperable for forestry) for semi primitive non motorized. Within the operable forest, manage for semi primitive motorized with road closure upon the conclusion of each harvesting entry.	G-12 G-13 G-29
General Biodiversity				
1.	Maintain the regional connectivity corridor between the East and West Kootenays via a low elevation pass at the headwaters of Windy Creek into the Revelstoke District to contribute to ecosystem representation (ESSFwc2 and ICHwk1) and to serve as habitat linkage for the seasonal migration of grizzly bears and caribou.	**1.1**	Apply the connectivity guidelines within the regional connectivity corridor as indicated in Chapter 3, section 3.3.	
2.	Retain attributes for old growth dependent	**2.1**	In establishing priorities for Old	

	species and fur bearers.		Growth Management Areas, consideration should be given to Cedar-Hemlock and Englemann Spruce Sub Alpine Fir in the Windy and Austerity drainages.

Ungulates

1.	Maintain the abundance of moose within the sustainable carrying capacity of their habitat.	**1.1**	Maintain the priority summer habitat within this unit through application of the biodiversity emphasis under the FPC.

Esplanade Range
G-S03

Objective	Strategy	Landscape Units

Access Management

1.	Manage for remote recreation and conservation values, while allowing resource extraction to proceed.	**1.2**	Implement road closures and prohibit motorized access for use other than approved industrial activity.
		1.3	Minimize duration of each timber harvest entry, maximize the time between entries and minimize the number of entries.

Recreation

1.	Maintain a range of recreation opportunities towards the semi primitive end of the Recreation Opportunity Spectrum.	**1.1**	Manage upland areas (inoperable for forestry) for semi primitive, non motorized recreation.

Canyon Creek
G-S04

Objective	Strategy	Landscape Units

Access Management

1.	Ensure the range of objectives and strategies are integrated within the Canyon Creek area, particularly as they relate to access for proposed development.	**1.1**	All proposals for new road development or expansions will be evaluated through either: • an enhanced referral process as described in the Access Management Guidelines, Chapter 3, section 3.12, or • special measures which, because of imminent development, require immediate attention.
2.	Manage for remote recreation and conservation values, while allowing	**2.1**	Implement road closures and prohibit motorized access for use other than

	resource extraction to proceed.		approved industrial activity.
		2.2	Minimize duration of each timber harvest entry, maximize the time between entries and minimize the number of entries.

Recreation

1.	Maintain a range of recreation opportunities towards the semi primitive end of the Recreation Opportunity Spectrum.	1.1	Manage upland areas (inoperable for forestry) for semi primitive non motorized. Within the operable forest, manage for semi primitive motorized with road closure upon the conclusion of each harvesting entry.	G-24

General Biodiversity

1.	Maintain the regional connectivity corridor between the Columbia River wetlands and the Spillamacheen and Glacier National Park to serve as habitat linkage for the seasonal migration of grizzly bears and mule deer and to support Glacier National Park.	1.1	Apply the connectivity guidelines within the regional connectivity corridor as indicated in Chapter 3, section 3.3.
2.	Retain attributes for old growth dependent species and fur bearers.	2.1	In establishing priorities for Old Growth Management Areas, consideration should be given to the unit.

Ungulates

1.	Maintain the abundance of mule and white-tailed deer, elk and Rocky Mountain Goat within the sustainable carrying capacity of their habitat.	1.1	Maintain the priority summer habitat within this unit through application of the biodiversity emphasis under the FPC.

Wide Ranging Carnivores

1.	Maintain sufficient seasonal habitat to retain the existing grizzly bear population.	1.1	Support the Grizzly and Black Bear Study funded by the CBFWCP to define bear population size, movements and mortality within the Columbia Valley east and west of Donald, BC.

Moberly Marshes
G-S05

Objective	Strategy	Landscape Units

Access Management

1	Ensure the range of objectives and strategies are integrated throughout the unit, particularly as they relate to access for proposed development.	1.1	Lower level strategic planning to determine specific access requirements and possible restrictions.

Settlement

1.	Maintain opportunities for continued	1.1	Integrate existing private land

	transportation and utility uses for existing private land, and to provide a link to areas outside the unit.		transportation and utility requirements in the unit into the management plan for the Columbia Wetlands Wildlife Management Area.

Recreation

1.	Maintain a range of recreation opportunities towards the semi primitive non motorized end of the Recreation Opportunity Spectrum.	**1.1**	Manage river corridor for a natural environment setting.	G-23 G-25
		1.2	Lower level strategic planning for recreation to address activity management issues, recreation use levels and use Limits of Acceptable Change methodology.	G-20

General Biodiversity

1.	Retain wetland ecological elements and processes, including species richness, distribution and diversity at a moderate risk.	**1.1**	Implement the Columbia Marshes Wildlife Management Plan.
2.	Maintain the regional connectivity corridor in the Columbia Wetlands to contribute to ecosystem representation (ICHmk1) and to serve as habitat linkage for migrating waterfowl.	**2.1**	Apply the connectivity guidelines within the regional connectivity corridor as indicated in Chapter 3, section 3.3.
3.	Ensure habitat requirements for red and blue listed and regionally significant species are achieved.	**3.1**	Address the American Bittern, Western Grebe and Great Blue Heron through application of the appropriate components of the FPC.

Fisheries

1.	Maintain wild fish stocks and habitat for existing fish species in the Upper Columbia River.	**1.1**	Undertake an assessment of fish and fish habitat to develop an appropriate management strategy to ensure sensitive habitats are not negatively impacted.
		1.2	Conduct basic life history investigations.

Air Quality

1.	Improve air quality in Golden.	**1.1**	Continue to support and liaise with Golden Air Quality Committee on a regular basis, attend meetings as needed to provide technical support.
		1.2	Work with the Committee to secure funding for purchase and operation of a TEOM and associated equipment and meteorological (wind speed and direction) equipment to allow real-time access to air quality data and real-time management of air quality.
		1.3	Develop some community expertise in routine operation and maintenance of TEOM as well as local expertise in evaluation of data and issuance of air quality advisories.

Moose Creek
G-S06

Objective	Strategy	Landscape Units

Access Management

	Objective		Strategy	Landscape Units
1.	Ensure the range of objectives and strategies are integrated within the Moose Dainard areas, particularly as they relate to access for proposed development.	1.1	All proposals for new road development or expansions will be evaluated through either: • an enhanced referral process as described in the Access Management Guidelines, Chapter 3, section 3.12, or • special measures which, because of imminent development, require immediate attention.	
2.	Manage for remote recreation and conservation values, while allowing resource extraction to proceed.	2.1	Implement road closures and prohibit motorized access for use other than approved industrial activity.	
		2.2	Minimize duration of each timber harvest entry, maximize the time between entries and minimize the number of entries.	

Recreation

	Objective		Strategy	Landscape Units
1.	Maintain a range of recreation opportunities towards the semi primitive end of the Recreation Opportunity Spectrum.	1.1	Manage upland areas (inoperable for forestry) for semi primitive non motorized, within the operable forest, manage for semi primitive motorized with road closure upon the conclusion of each harvesting entry.	G-27

General Biodiversity

	Objective		Strategy	Landscape Units
1.	Maintain the regional connectivity corridor between Yoho National Park and the valley bottoms of Kootenay and Beaverfoot drainages, to serve as habitat linkage for the seasonal migration of grizzly bears, moose and elk and to support Kootenay and Yoho National Parks.	1.1	Apply the connectivity guidelines within the regional connectivity corridor as indicated in Chapter 3, section 3.3.	
2.	Retain attributes for old growth dependent species and fur bearers.	2.1	In establishing priorities for Old Growth Management Areas, consideration should be given to Spruce within the unit.	

Ungulates

	Objective		Strategy	Landscape Units
1.	Maintain the abundance of elk and moose within the sustainable carrying capacity of their habitat.	1.1	Maintain the priority summer habitat within this unit through application of the biodiversity emphasis under the FPC.	

Encampment Creek and Wood Arm
G-I01

Objective	Strategy	Landscape Units

Access Management

1.	Manage for remote recreation and conservation values, while allowing resource extraction to proceed.	1.1	Implement road closures and prohibit motorized access for use other than approved industrial activity.
		1.2	Implement barge access restrictions.

Recreation

1	Maintain a range of recreation opportunities towards the semi primitive end of the Recreation Opportunity spectrum.	1.1	Degree and location of motorized road closures to be determined through lower level strategic planning.

General Biodiversity

1.	Maintain the regional connectivity corridor between the Columbia Reservoir to the upper Wood River to serve as habitat linkage for the seasonal migration of moose and caribou and to support Cummins Provincial Park.	1.1	Apply the connectivity guidelines within the regional connectivity corridor as indicated in Chapter 3, section 3.3.

Ungulates

1.	Maintain the abundance of moose within the sustainable carrying capacity of their habitat.	1.1	Maintain the priority summer habitat within this unit through application of the biodiversity emphasis under the FPC.

Fisheries

1.	Maintain wild fish stocks and habitat for Kokanee.	1.1	In establishing priorities for watershed assessments, consideration should be given to the Wood River.
2.	Maintain wild fish stocks and habitats for existing species in Lake Kinbasket.	2.1	Initiate a program to collect the necessary information on fish stocks and habitat.
		2.2.	Monitor the fishery over time to obtain an indication of population status.

Clemenceau Icefields; Kinbasket, Sullivan and Bush Rivers
G-I02

Objective	Strategy	Landscape Units

Access Management

1.	Manage for remote recreation and conservation values in Ricebrook drainage, while allowing resource extraction to proceed.	1.1	Implement road closures and prohibit motorized access for use other than approved industrial activity.

		1.2	Minimize duration of each timber harvest entry, maximize the time between entries and minimize the number of entries.

Recreation

1.	Maintain a range of recreational opportunities from roaded resource land to semi primitive non motorised.	1.1	Maintain opportunities for backcountry recreation by managing the inoperable forest (especially in the Clemenceau and Columbia Icefields area) for semi primitive non motorized recreation.	G-1 G-5 G-6 G-7 G-10
		1.2	Degree and location of motorized road closures to be determined through lower level strategic planning.	

General Biodiversity

1.	Maintain the regional connectivity corridor between Banff National Park and the lower elevation of the Bush River, via a low elevation pass at the headwaters of Rice Brook (creating a linkage between SRMZ units G-S01 and G-S02 with Cummins Provincial Park) to serve as habitat linkage for the seasonal migration of grizzly bears and moose and to support Banff National Park.	1.1	Apply the connectivity guidelines within the regional connectivity corridor as indicated in Chapter 3, section 3.3.
2.	Retain attributes for old growth dependent species and fur bearers.	2.1	In establishing priorities for Old Growth Management Areas, consideration should be given to the Interior Cedar and Hemlock zone in the Kinbasket area.

Ungulates

1.	Maintain the abundance of elk, moose and Rocky Mountain Goats within the sustainable carrying capacity of their habitat.	1.1	Maintain summer alpine habitat and minimize displacement of ungulates in the Kinbasket and Sullivan drainages by developing an access management plan in accordance with the access management guidelines (Chapter 3, section 3.12).

Wide Ranging Carnivores

1.	Maintain sufficient seasonal habitat, particularly with respect to high productivity avalanche slopes, to retain the existing grizzly bear population.	1.1	Implement road closures in Kinbasket drainages and prohibit motorized access for use other than approved industrial activity.

Fisheries

1.	Maintain wild fish stocks and habitat for regionally significant Kokanee spawning and rearing habitat.	1.1	In establishing priorities for watershed assessments, consideration should be given to the Bush River and Sullivan Creek.

Westside of Kinbasket Lake and Blackwater Ridge
G-I03

Objective	Strategy	Landscape Units

Recreation

1.	Maintain a range of recreational opportunities from roaded resource land to semi primitive non motorized.	1.1	A priority for lower level strategic planning will be to determine if/what portions of Bluewater Creek will be managed as a Backcountry River Corridor consistent with the Backcountry Recreation Guidelines (Chapter 3, section 3.9).	G-16
		1.2	Degree and location of motorized road closures to be determined through lower level strategic planning.	

General Biodiversity

1.	Retain forest ecological elements and processes, including species richness, distribution and diversity.	1.1	Maintain the Goosegrass Ecological Reserve.
2.	Maintain the regional connectivity corridor between the Columbia Reservoir, Windy/Austerity and Gold/Bachelor into Glacier National Park to serve as habitat linkage for the seasonal migration of moose.	2.1	Apply the connectivity guidelines within the regional connectivity corridor as indicated in Chapter 3, section 3.3.

Fisheries

1.	Maintain wild fish stocks and habitat for existing fish species in the Upper Columbia River.	1.1	Undertake an assessment of fish and fish habitat to develop an appropriate management strategy to ensure sensitive habitats are not negatively impacted.
		1.2	Conduct basic life history investigations.
2.	Maintain wild fish stocks and habitats for existing species in Lake Kinbasket.	2.1	Initiate a program to collect the necessary information on fish stocks and habitat.
		2.2	Monitor the fishery over time to obtain an indication of population status.

Bachelor Creek, Gold River, Ventego Creek

G-I04

	Objective		Strategy	Landscape Units
Recreation				
1	Maintain a range of recreation opportunities towards the semi primitive end of the Recreation Opportunity Spectrum.	1.1	Degree and location of motorized road closures to be determined through lower level strategic planning.	
General Biodiversity				
1.	Maintain the regional connectivity corridor within the Bachelor system between the Columbia Reservoir and into the Revelstoke District via a low elevation pass at the headwaters of Gold Creek, to serve as habitat linkage for the seasonal migration of mountain caribou and to support Glacier National Park.	1.1	Apply the connectivity guidelines within the regional connectivity corridor as indicated in Chapter 3, section 3.3.	
2.	Retain attributes for old growth dependent species and fur bearers.	2.1	In establishing priorities for Old Growth Management Areas, consideration should be given to the Interior Cedar-Hemlock and Engelmann Spruce Sub-Alpine Fir zones in Gold and Palmer Creeks.	
Ungulates				
1.	Maintain the abundance of moose within the sustainable carrying capacity of their habitat.	1.1	Maintain the priority summer habitat within the Bachelor drainage through application of the biodiversity emphasis under the FPC.	
Fisheries				
1.	Maintain riparian wetland values in the upper Bachelor drainage.	1.1	In establishing priorities for watershed assessments, consideration should be given to the Bachelor drainage..	

Valentciennes, Upper Bluewater and Blaeberry
G-I05

	Objective		Strategy	Landscape Units
Access Management				
1.	Manage for remote recreation and conservation values, while allowing resource extraction to proceed.	1.2	Maintain existing access closure in Bluewater drainage in absence of lower level plan.	
Recreation				
1.	Maintain a range of recreational opportunities from roaded resource land to semi primitive non motorized.	1.1	A priority for lower level strategic planning will be to determine if/what portions of the Blaeberry River and Bluewater Creek will be managed as Backcountry River Corridors	G-19 G-

			(Chapter 3, section 3.9).	21
2.	Maintain the integrity of the Howse Pass Heritage trail.	**2.1**	Manage identifiable portions of the Howse Pass Trail, from Howse Pass to Cairnes Creek, as a Heritage Trail, consistent with the interagency agreement for Heritage Trails (Chapter 3, section 3.9).	
		2.2	Degree and location of motorized road closures to be determined through lower level strategic planning.	
		2.3	Location and management of the trail corridor downstream of Cairnes Creek to be defined in lower level strategic planning.	

General Biodiversity

1.	Retain forest ecological elements and processes, including species richness, distribution and diversity at a moderate risk.	**1.1**	Complete the ongoing project to develop a biophysical classification scheme appropriate for avalanche paths funded by the CBFWCP.
2.	Maintain the regional connectivity corridor between the Columbia system and Alberta via Howse Pass to serve as habitat linkage for the seasonal migration of ungulates and grizzly bears and to support Yoho National Park.	**2.1**	Apply the connectivity guidelines within the regional connectivity corridor as indicated in Chapter 3, section 3.3.
3.	Retain attributes for old growth dependent species and fur bearers.	**3.1**	In establishing priorities for Old Growth Management Areas, consideration should be given to the Interior Cedar/Hemlock zone in the Bluewater drainage.

Fisheries

1.	Maintain riparian wetland values in the Marl, Blackwater and Succer Creek areas.	**1.1**	In establishing priorities for watershed assessments, consideration should be given to the Marl, Blackwater and Succer Creek areas.

Dogtooth Range, Westbench
G-I06

Objective	Strategy	Landscape Units

Agriculture

1.	Maintain opportunities for increased or improved agriculture activity.	**1.1**	Potential agricultural opportunities, particularly within the Dogtooth polygon, identified by individuals through the Range Use Plan process under the FPC or proponent application to the appropriate agencies, will be reviewed and evaluated by an inter-agency government process which will involve affected parties and the public.	G-23

Commercial Tourism

1.	Maintain and enhance opportunities for resorts and commercial backcountry recreation.	1.1	Provide Crown land, as necessary, for expansion of the Westbench Recreation area. This action will be subject to consideration of conservation values, municipal and regional planning, and the provincial land use charter and goals.

Recreation

1.	Maintain a range of recreational opportunities from roaded resource land to semi primitive non motorized.	1.1	A priority for lower level strategic planning will be to define commercial use, use levels, tenure allocations and recreation infrastructure.	G-23
		1.2	Degree and location of motorized road closures to be determined through lower level strategic planning.	

General Biodiversity

1.	Retain forest ecological elements and processes, including species richness, distribution and diversity at a moderate risk.	1.1	Support the Nestbox Monitoring Project funded by the CBFWCP for cavity nesting ducks. Support the Amphibian Monitoring Project funded by the CBFWCP to implement a long term monitoring program.
		1.2	Support the Amphibian Monitoring Project funded by the CBFWCP to implement a long term monitoring program.
2.	Maintain the regional connectivity corridor between the lower elevations of the Columbia River system and Glacier National to serve as habitat linkage for the seasonal migration of mule deer and moose and to support Glacier National Park.	2.1	Apply the connectivity guidelines within the regional connectivity corridor as indicated in Chapter 3, section 3.3.

Ungulates

1.	Maintain the abundance of elk, mule and white-tailed deer, moose and Rocky Mountain Goats within the sustainable carrying capacity of their habitat.	1.1	Maintain summer alpine habitat and minimize displacement of ungulates by developing an access management plan to ensure compatible activity and uses in the area, in accordance with the access management guidelines (Chapter 3, section 3.12).

Wide Ranging Carnivores

1.	Maintain sufficient seasonal habitat, particularly with respect to high productivity avalanche slopes to retain the existing grizzly bear population.	1.1	Support the Grizzly and Black Bear Study funded by the CBFWCP to define bear population size, movements and mortality within the Columbia Valley east and west of Donald BC.

Golden - Donald, Northbench

G-I07

Objective	Strategy	Landscape Units

Agriculture

1.	Maintain opportunities for increased or improved agriculture activity.	1.1	Potential agricultural opportunities, particularly within the Dogtooth polygon, identified by individuals through proponent application to the appropriate agencies, will be reviewed and evaluated by an inter-agency government process which will involve affected parties and the public.	G-20 G-25

Recreation

1.	Maintain a range of recreational opportunities from roaded resource land to semi primitive non motorized.	1.1	A priority for lower level strategic planning will be to define commercial use levels, tenure allocations and recreation infrastructure, which will include the Kicking Horse River.	G-20 G-25
		1.2	Degree and location of motorized road closures to be determined through lower level strategic planning.	

General Biodiversity

1.	Retain forest and grassland ecological elements and processes, including species richness, distribution and diversity at a low risk.	1.1	The Kicking Horse Limber Pines should be designated as a Sensitive Area under the FPC.	G-20
2.	Maintain the regional connectivity corridor between the Columbia River system and Yoho National Park to serve as habitat linkage for the seasonal migration of ungulates.	2.1	Apply the connectivity guidelines within the regional connectivity corridor as indicated in Chapter 3, section 3.3.	
3.	Retain attributes for old growth dependent species and fur bearers.	3.1	In establishing priorities for Old Growth Management Areas, consideration should be given to Limber Pine in the Kicking Horse drainage.	

Ungulates

1.	Maintain the abundance of mule and white-tailed deer, Rocky Mountain Bighorn Sheep and regionally significant Rocky Mountain Goats within the sustainable carrying capacity of their habitat.	1.1	Maintain summer alpine habitat and minimize displacement of ungulates by developing an access management plan for Frenchman's Ridge to ensure compatible activity and uses in the area, in accordance with the access management guidelines (Chapter 3, section 3.12).	
		1.2	Maintain the ongoing habitat enhancement of Aspen stand thinning at Frenchman's Ridge.	
		1.3	Support the Willowbank Mountain	

			Enhancement Project funded by the CBFWCP to manually brush and girdle deciduous habitat. This project will be monitored as to the effect on cavity nesters and other song birds which may utilize the snag trees.
		1.4	Complete the Frenchmans Ridge Enhancement Project funded by the CBFWCP to manually treat dense aspen and decadent browse shrubs.
		1.5	Support the Amphibian Monitoring Project funded by the CBFWCP to implement a long term monitoring program.

Air Quality

1.	Improve air quality in Golden.	1.1	Continue to support and liaise with golden Air Quality Committee on a regular basis, attend meetings as needed to provide technical support.
		1.2	Work with the Committee to secure funding for purchase and operation of a TEOM and associated equipment and meteorological (wind speed and direction) equipment to allow real-time access to air quality data and real-time management of air quality.
		1.3	Develop some community expertise in routine operation and maintenance of TEOM as well as local expertise in evaluation of data and issuance of air quality advisories.

Kicking Horse, Beaverfoot and Kootenay Rivers
G-I08

Objective	Strategy	Landscape Units

Recreation

1.	Maintain a range of recreational opportunities from roaded resource land to semi primitive non motorized.	1.1	A priority for lower level strategic planning is to define recreation commercial use levels, tenure allocations and recreation infrastructure.	G-26
		1.2	Degree and location of motorized road closures to be determined through lower level strategic planning.	

General Biodiversity

1.	Maintain the regional connectivity corridor between the low elevation drainages of Beaverfoot, Kicking Horse and Kootenay River with Yoho and Kootenay National Parks to serve as habitat linkage for the seasonal migration of elk, moose and grizzly bears and to support Yoho and Kootenay National Parks.	1.1	Apply the connectivity guidelines within the regional connectivity corridor as indicated in Chapter 3, section 3.3.

2.	Retain attributes for old growth dependent species and fur bearers.	**2.1**	In establishing priorities for Old Growth Management Areas, consideration should be given to Montana Spruce in the upper Kootenay and Beaverfoot drainages, the Interior Douglas Fir and Interior Cedar-Hemlock zones in the Glenogle drainage, and the Englemann Spruce, Sub-Alpine Fir zone in all three drainages.

Ungulates

1.	Maintain the abundance of mule and white-tailed deer, elk, moose and Rocky Mountain Goats within the sustainable carrying capacity of their habitat.	**1.1**	Maintain summer alpine habitat and minimize displacement of ungulates in the Beaverfoot and upper Kootenay drainages by developing an access management plan to ensure compatible activity and uses in the area, in accordance with the access management guidelines (Chapter 3, section 3.12).
		1.2	Maintain the priority summer habitat within this unit through application of the biodiversity emphasis under the FPC.

Fisheries

1.	Maintain riparian wetland values in the Beaverfoot and Kootenay Rivers.	**1.1**	In establishing priorities for watershed assessments, consideration should be given to the Beaverfoot and Kootenay Rivers.

Appendix A: Protected Areas

The following is a brief description of the new provincial parks that are located within the Golden Timber Supply Area. As well, there is a statement of management intent which defines the proposed management emphasis for the area. The new provincial parks will be managed in accordance with the general management direction outlined in Chapter 4. BC Parks will be undertaking a planning process to develop Park Masterplans for each of the new provincial parks. There will be opportunities for public input and review of the Park Masterplans. An indication of planning priority for each of the new parks is identified in Chapter 4.

The Cummins Provincial Park

The new Cummins Provincial Park is an unroaded drainage on the east side of the Mica Reservoir in the north-east corner of the region. The area contains a connected series of three spectacular waterfalls and two glacial lakes set against the backdrop of the Clemencea Ice Fields.

The area contains nationally significant recreation values for mountaineering and ski-touring. Scenic values are very high. The new park provides opportunities for wilderness expeditions in a remote and spectacular area.

The park includes important riparian habitat of meadows and marshes and underrepresented low elevation forest. The area also includes important habitat for grizzly bear, mountain goat and mountain caribou.

As a result of the existence of both significant recreation values, as well as high wildlife and biodiversity values, the management emphasis in the upper drainage will be recreation while the focus on the lower drainage will be conservation.

Appendix B

GOLDEN: Rationale for size, boundary locations and biodiversity emphasis assignments, as outlined in Chapter 3, section 3.2 of the KBLUP implementation strategy.

Landscape Unit #	Landscape Unit Name	BEO Assignment	Rationale for Size and Boundary Location	Rationale for BEO Assignment
1	Upper Wood	High	Designed to encompass the non-reservoir and unaccessed components of the watershed, the entire Heritage Trail and unnamed drainage linking to Cummins Park.	Old growth, regional connectivity, caribou, grizzly bear, remoteness/wildland attributes, fish, proximity to Hamber and Jasper Parks, designated as an S.R.M.Z.
2	M.D.E.	Intermediate	Designed to link the North side of Wood River by encompassing the Molson, Dainard and Encampment drainages.	Caribou, connectivity, old growth
3	Lower Wood	Low	Designed to encompass the entire South, non-reservoir side of the Wood arm which has a similar aspect and high operable component.	Caribou, old growth, connectivity
4	TSAR	Intermediate	Designed to encompass an area of similar aspect along the East side of the reservoir from Wood arm to the Kinbasket River.	Caribou, connectivity
5	Cummins		Designed to encompass the Cummins River	

			watershed.	
6	Kinbasket	High	Designed to encompass the Kinbasket River watershed.	Old growth, regional connectivity, wetlands, grizzly bear, designated as an S.R.M.Z.
7	Sullivan	Low	Designed to encompass the Sullivan River watershed.	Fisheries (kokanee), grizzly bear
8	Foster/Garrett	Low	Designed to encompass an area of similar aspect along the East side of the reservoir from the Sullivan River to the aspect change associated with the Foster/Garrett landscape unit.	Winter range
9	Chatter/Prattle	Low	Designed to encompass the entire Chatter and Prattle Creek watersheds. Considering the relatively small area of each of these systems, amalgamation was considered more appropriate than separation.	Fisheries (Bull Trout - Chatter Creek)
10	Bush River	Low	Designed to encompass the entire Bush River watershed.	Connectivity, fisheries (Bull Trout)
11	Goosegrass	Intermediate	Designed to encompass an area of similar aspect along the West side of the reservoir from the Goosegrass ecological reserve to Windy Creek.	Caribou, connectivity, unique habitat features

Landscape Unit #	Landscape Unit Name	BEO Assignment	Rationale for Size and Boundary Location	Rationale for BEO Assignment
12	Windy Sir	High	Designed to	Caribou, regional

	Sanford		encompass the entire Windy and Austerity drainages.	connectivity, remoteness/wildland attributes, grizzly bear, fisheries (Bull Trout), designated as an S.R.M.Z.
13	Bachelor	High	Designed to encompass the entire Bachelor Creek watershed.	Caribou, regional connectivity, old growth, designated as an S.R.M.Z.
14	Ventego	Low	Designed to encompass the entire Ventego Creek watershed.	
15	Espanade	Low	Designed to encompass an area along the West side of the reservoir from Bachelor Ceek to the Southern end of the reservoir.	Alpine habitat
16	Blackwater Ridge	Invermere	Designed to encompass all the benchland and upper extremities of the Blackwater and Succour Creek drainages.	Winter range, ICHxw subzone representation, fisheries (kokanee, Bull Trout), grizzly bear
17	Hope Goodfellow	Low	Designed to encompass the entire Hope Goodfellow watershed.	
18	Valenciennes	Low	Designed to encompass the entire Valenciennes watershed.	Regional connectivity
19	Bluewater/ Waitabit	Low	Designed to encompass the entire Bluewater and Waitabit River watersheds. Considering the relatively small area of these drainages it was considered more	Wildland attributes (Waitabit), old growth, R.M.goats, grizzly bear (Bluewater)

			appropriate to amalgamate than separate.	
20	Moberly	Intermediate	Designed to encompass the Columbia River terraces along the N.E. side of the Columbia River.	Regional connectivity, ICHxw subzone representation, wetlands and interface, winter range, R.M. goats
21	Blaeberry	Intermediate/Low	Designed to encompass the entire Blaeberry River watershed.	Regional connectivity, fisheries Bull Tout), R.M. goats
22	Quartz	Intermediate/Low	Designed to encompass the entire Quartz Creek watershed.	Ungulate winter range, unique habitat (Whitepine stands)
23	West Bench	Intermediate	Designed to encompass the benchland on the West side of the Columbia River from Donald to Canyon Creek.	Regional and District connectivity, winter range, wetlands
24	Canyon	High	Designed to encompass the entire Canyon Creek watershed.	Old growth, remoteness/wildland attributes, designated an S.R.M.Z.
25	MT.7	Low	Designed to encompass an area along the East side of the Columbia River from the confluence of the Columbia River to the South end of the Golden Forest District.	R.M. goats, ICHmk1, Msdk, IDFun, subzone representation, private land
26	Kicking Horse Beaverfoot	High/ Intermediate	Designed to encompass the entire Glenogle Creek and Beaverfoot River watersheds.	Connectivity, winter range, wetland habitat
Landscape Unit #	**Landscape Unit Name**	**BEO Assignment**	**Rationale for Size and Boundary**	**Rationale for BEO Assignment**

			Location	
27	Moose Dainard	High	Designed to encompass the entire Moose, Dainard and Ice River watersheds.	grizzly bear, regional connectivity, remoteness/wildland attributes, fisheries (Bull Trout), designated as an S.R.M.Z.
28	Kootenay	Intermediate/Low	Designed to encompass that section of the Kootenay River situated within the Golden Forest District.	regional connectivity, fisheries(Westslope cutthroat trout)
29	Swan	Intermediate/Low	Designed to encompass an area of similar aspect along the West side of the reservoir from Windy Creek to Bachelor.	caribou

Back to Table of Contents
•Top •Copyright •Disclaimer •Privacy •Government of British Columbia

Kootenay/Boundary Land Use Plan

Implementation Strategy

Kootenay Inter-Agency Management Committee

June 1997

Appendix 5

Land and Resource Management Direction within the Invermere Forest District

June 1997

CONTENTS

Section

1. Purpose
2. Organization
3. Resource Management Zone Objectives & Strategies

Appendices

A Community Watersheds

B Protected Areas

C Wildlife Management Area

D Enhanced Forest Management Pilot Project

E Rationale for Biodiversity Emphasis Options

1.0 Purpose

This appendix identifies geographically specific land and resource management objectives and strategies for the Invermere Forest District. This site specific management direction covers issues which are:

- not explicitly dealt with through the regional management objectives and strategies (Chapter 2) or the resource management guidelines and accompanying maps (Chapter 3) because they are of local significance, or:
- local interpretations which assist the implementation of the regional management objectives and strategies (Chapter 2) or the resource management guidelines and accompanying maps (Chapter 3).

2.0 Organization

The material in this appendix is organized and presented according to the KBLUP's land use designation categories. Each of the Resource Management Zones is identified by a reference number. For example, the Resource Management Zones identified as I-S01 indicates that the Resource Management Zone is in the Invermere Forest District (I), is within the special resource management area designation category (S), and is tagged with the identifier number 01.

The site specific management objectives and strategies included in this appendix are listed under headings which correspond to those used in the regional objectives and strategies (Chapter 2). These site specific management objectives and strategies are also tagged to specific landscape units. the Forest Practices Code requires definition of landscape units, including boundaries and management objectives. A landscape unit is a geographic area of land which encompasses a single, or group of, watersheds. Recommended landscape unit boundaries for the Kootenay/Boundary region are identified through section 3.2 of Chapter 3. These areas are generally subunits of Resource Management zones and, in some cases, exist in more than one Zone. The appropriate landscape units are identified in this appendix to assist in translating the management direction into landscape level planning. For further discussion on landscape level planning, please see Chapter 6, section 6.3.

Note: Changes, additions or deletions to the resource objectives and strategies outlined in this Appendix may result from further work at either the regional and/or landscape level. Such changes will be undertaken in a manner consistent with the mechanism for Plan Amendment (Chapter 6, section 6.8) or through subsequent landscape level planning (Chapter 6, section 6.3).

3.0 Resource Management Zone Objectives and Strategies

Upper Spillamacheen

I-S01

Objective	Strategy	Landscape Units
Recreation		
1. Maintain opportunities for semi primitive non motorized and semi primitive	**1.1** Consider year round winter motorized use restrictions in the	I-37

	motorized recreation.		Bald Mountain area.	

General Biodiversity

1.	Maintain the regional connectivity corridor between Glacier National Park and Columbia system to contribute to ecosystem representation, to support Glacier National Park and to serve as habitat linkage for the seasonal migration of mule deer and moose.	1.1	Apply the connectivity guidelines within the regional connectivity corridor as indicated in Chapter 3, section 3.3.

Ungulates

1.	Maintain the abundance of elk and mule deer in the alpine areas within the sustainable carrying capacity of their habitat.	1.1	Maintain the priority summer habitat within this unit through application of the biodiversity emphasis under the FPC.

Columbia River Wetlands

I-S02

Objective	Strategy	Landscape Units

Recreation

1.	Provide recreational opportunities within the Columbia Marshes.	1.1	Manage river corridor recreation as outlined in the Wildlife Management Plan.	I-29 I-30 I-32 I-36

General Biodiversity

1.	Retain forest and wetland ecological elements and processes, including species richness, distribution and diversity at a moderate risk.	1.1	Implement the Columbia Marshes Wildlife Management Plan.
2.	Maintain the regional connectivity corridor in the Columbia Wetlands to contribute to ecosystem representation (IDFun) and to serve as habitat linkage for migrating waterfowl.	2.1	Apply the connectivity guidelines within the regional connectivity corridor as indicated in Chapter 3, section 3.3.
3.	Ensure that habitat requirements for red and blue listed and regionally significant species are achieved.	3.1	Complete the East Kootenay Badger Study in the southern half of the unit, to identify habitat and population inventories.

Fisheries

1.	Maintain wild fish stocks and habitat for existing fish species in the Upper Columbia River.	1.1	Undertake an assessment of fish and fish habitat to develop an appropriate management strategy to ensure sensitive habitats are not negatively impacted.

1.2	Conduct basic life history investigations.

Albert River
I-S03

Objective	Strategy	Landscape Units

Access Management

1.	Ensure the range of objectives and strategies are integrated throughout the unit, particularly as they relate to access for proposed development.	1.1	All proposals for new road development or expansions will be evaluated through either: • an enhanced referral process as described in the Access Management Guidelines, Chapter 3, section 3.12, or • special measures which, because of imminent development, require immediate attention.

General Biodiversity

1.	Maintain the regional connectivity corridor between the Height of the Rockies and the Kootenay system to support the Height of the Rockies Provincial Park.	1.1	Apply the connectivity guidelines within the regional connectivity corridor as indicated in Chapter 3, section 3.3.

North White River
I-S04

Objective	Strategy	Landscape Units

General Biodiversity

1.	Maintain the regional connectivity corridor between the Height of the Rockies and the Kootenay and White River systems to support the Height of the Rockies Provincial Park.	1.1	Apply the connectivity guidelines within the regional connectivity corridor as indicated in Chapter 3, section 3.3.

Kotsats Creek
I-S05

Objective	Strategy	Landscape Units

General Biodiversity

1.	Maintain the regional connectivity corridor the Height of the Rockies and the Kootenay and White River systems to support the Height of the Rockies Provincial Park.	1.1	Apply the connectivity guidelines within the regional connectivity corridor as indicated in Chapter 3, section 3.3.

Columbia Lake (East Side)
I-S06

Objective	Strategy	Landscape Units

Settlement

1.	Maintain access through the unit to existing private land	1.1	Provide access to existing private land in the unit, as part of the management plan for the Wildlife Management Area.	

Access Management

1.	Ensure the range of objectives and strategies are integrated within the Diorite Creek area, particularly as they relate to access for proposed development.	1.1	All proposals for new road development or expansions will be evaluated through either: • an enhanced referral process as described in the Access Management Guidelines, Chapter 3, section 3.12, or • special measures which, because of imminent development, require immediate attention.	

Heritage/Culture

1.	Protect regionally significant caves, trails and pictographs within the unit.	1.1	The pictographs and caves in this unit should be designated as Sensitive Areas for natural features under the *FPC Act.*	

Recreation

1.	Maintain recreational settings which are compatible with the Wildlife Management Area and resources.	1.1	Manage recreation opportunities as identified in the Wildlife Management Plan.	I-13

General Biodiversity

1.	Retain forest and wetland ecological elements and processes, including species richness, distribution and diversity at a low to moderate risk level.	1.1	Define the East Side Columbia Lake Wildlife Management Area (WMA) boundaries as indicated on Map 2 in Appendix C.	
		1.2	Develop and implement a comprehensive Wildlife Management Area plan.	
		1.3	Priorities for implementation of the Fire-Maintained Ecosystem Restoration Guidelines (Chapter 3, section 3.10) exist on the east side of Columbia Lake.	I-13
		1.4	Maintain the existing access management program on the East side of Columbia Lake. Initiate road/trail deactivation and rehabilitation in accordance with the access management guidelines (Chapter 3, section 3.12).	I-13

Objective	Strategy		Landscape Units
		1.5	No grazing tenures to be issued on the east side of Columbia Lake.

		1.6	Complete the East Columbia Lake Bio-Terrain Ecosystem Mapping Project funded by the CBFWCP to upgrade the biophysical mapping to new provincial standards.	
		1.7	Support the Large Mammal Monitoring Project funded by the CBFWCP.	
		1.8	Armstrong Bay should be designated as a Sensitive area under the FPC.	I-13
2.	Maintain the regional connectivity corridor between the Columbia and Kootenay Rivers and to create a link with the Purcell Wilderness Conservancy, to serve as habitat linkage for the seasonal migration of ungulates.	2.1	Apply the connectivity guidelines within the regional connectivity corridor as indicated in Chapter 3, section 3.3.	
3.	Ensure habitat requirements for red and blue listed and regionally significant species are achieved.	3.1	Complete the East Kootenay Badger Study to identify habitat and population inventories.	
		3.2	Protect threatened and endangered vascular plants within the unit.	

Ungulates

1.	Maintain the abundance of elk, mule and white-tailed deer, moose and Rocky Mountain Bighorn Sheep within the sustainable carrying capacity of their habitat.	1.1	Define the East Columbia Lakes Wildlife Management Area (WMA) boundaries as indicated on Map 2, Appendix C.
		1.2	Develop and implement a comprehensive WMA plan.
		1.3	Develop no shooting zones.

Fisheries

1.	Maintain wild fish stocks and habitats for Burbot in Columbia Lake.	1.1	Document Burbot life histories and distribution.
		1.2	Assess potential recreational fishery impacts on stocks and habitat.
		1.3	Pursue a land reserve to enclose the known Burbot spawning area at the south end of the lake.
		1.4	Review fisheries management strategies for Columbia Lake.

Jumbo-Upper Horsethief

I-S07

Objective	Strategy	Landscape Units

Commercial Tourism

1.	Maintain and enhance opportunities for resorts and commercial backcountry recreation.	**1.1**	Subject to the outcome of the current Environmental Assessment process, provide Crown land, as necessary, for Jumbo Glacier resort.

Access Management

1.	Access for the proposed Jumbo Creek Resort will be decided through the Environmental Assessment process. In the event the Jumbo Creek Resort proposal does not go ahead, ensure the range of objectives and strategies are integrated throughout the unit, particularly as they relate to access for any further proposed development.	**1.1**	All proposals for new road development or expansions will be evaluated through either: • an enhanced referral process as described in the Access Management Guidelines, Chapter 3, section 3.12, or • special measures which, because of imminent development, require immediate attention.

Recreation

1.	Maintain a range of recreational opportunities from roaded resource land to semi primitive non motorized.	**1.1**	The Lake of the Hanging Glacier basin should be designated as a Sensitive Area under the *FPC Act*.	I-26
2.	Maintain non-commercial public opportunities for backcountry recreation in the Lake of the Hanging Glacier basin.	**2.1**	Commercial Backcountry Recreation applications will be reviewed for their ability to maintain or enhance non-commercial public backcountry recreation opportunities.	I-26

General Biodiversity

1.	Maintain the regional connectivity corridor between the East and West Kootenays through the Purcell Wilderness Conservancy, to support the Purcell Wilderness Conservancy and to serve as habitat linkage for the seasonal migration of grizzly bears.	**1.2**	Apply the connectivity guidelines within the regional connectivity corridor as indicated in Chapter 3, section 3.3.
2.	Retain attributes for old growth dependent species and fur bearers.	**2.2**	In establishing priorities for Old Growth Management Areas, consideration should be given to Spruce and Balsam throughout unit.

Ungulates

1.	Maintain the abundance of elk, moose and Rocky Mountain Goats within the sustainable carrying	**1.1**	Maintain summer alpine habitat for elk in the Jumbo and Stockdale Creek drainages and for goats throughout the unit through application of biodiversity emphasis options under the FPC and access

	capacity of their habitat.		management as identified in the access section for this Resource Management Zone.

Mt. Brewer
I-S08

Objective	Strategy	Landscape Units

Commercial Tourism

1.	Maintain and enhance opportunities for resorts and commercial backcountry recreation.	1.1	Provide Crown land, as necessary, for expansion the Panorama ski area. This action will be subject to consideration of conservation values, municipal and regional planning, and the provincial land use charter and goals.

Ungulates

1.	Maintain abundance of mule deer, elk, moose and regionally significant Rocky Mountain Goats within the sustainable carrying capacity of their habitat.	1.1	Maintain summer alpine habitat and minimize displacement of ungulates by developing an access management plan to ensure compatible activity and uses in the area.

Fir Mountain (North Side)
I-S09

Objective	Strategy	Landscape Units

General Biodiversity

1.	Maintain the regional connectivity corridor connection between the Columbia River system and the Purcell Wilderness Conservancy to serve as habitat linkage for the seasonal migration for ungulates.	1.1	Apply the connectivity guidelines within the regional connectivity corridor as indicated in Chapter 3, section 3.3.
2.	Ensure that habitat requirements for red and blue listed and regionally significant species are achieved.	2.1	Complete the East Kootenay Badger Study within the eastern half of the unit, to identify habitat and population inventories.

Mid-Findlay - Purcell
I-S10

Objective	Strategy	Landscape Units

Recreation

1.	Maintain a range of recreation opportunities towards the semi primitive end of the Recreation Opportunity Spectrum.	1.1	Manage roaded areas for semi primitive motorized recreation with road deactivation and access management restrictions following resource development

General Biodiversity

1.	Maintain the regional connectivity corridor between the East and West Kootenays through the Purcell Wilderness Conservancy	1.1	Apply high emphasis biodiversity, as per the FPC, as indicated in Chapter 3, section 3.2.	I-1

	to support for the Purcell Wilderness Conservancy and to serve as habitat linkage for the seasonal migration of ungulates.		
2.	Retain attributes for old growth dependent species and fur bearers.	2.1	In establishing priorities for Old Growth Management areas, consideration should be given to Western Larch throughout the unit (or require geographic reference) under the FPC.

Ungulates

1.	Maintain the abundance of elk and Rocky Mountain Goats within the sustainable carrying capacity of their habitat.	1.1	Maintain the priority summer habitat within this unit through application of the biodiversity emphasis under the FPC.

Fisheries

1.	Maintain wild fish stocks and habitat for Cutthroat and Bull Trout in Findlay Creek.	1.1	Undertake an assessment of fish and fish habitat.
		1.2	Review habitat conservation strategies.
		1.3	Document the fishery and harvest of various sport fish.
		1.4	Explore regulation changes which could be used to limit overfishing.

Buhl - Skookumchuck
I-S11

Objective	Strategy	Landscape Units

Minerals

1.	Accommodate road access over Rusty Ridge for exploration in the middle fork of Findlay Creek.	1.1	Road access required for mineral exploration in the middle fork of Findlay Creek by way of Skookumchuck Creek and tributaries, will be accommodated, subject to the range of KBLUP objectives and strategies. Roads will be permitted by means of enhanced approval procedures as per the Access Management guidelines, Chapter 3, section 3.12. (This access may not be needed if a route with I-I04 is selected.)
		1.2	In the event that mine construction within this unit is approved through the Environmental Assessment (EA) Process, road access along the Findlay Creek Access Corridor (ELU Act Protected Area) within the Purcell Wilderness Conservancy will be available, subject to road permitting conditions established through the EA process.

Recreation

	Maintain a range of recreation opportunities from roaded resource land	1.1	If industrial roading occurs within the Upper Buhl and Skookumchuck drainages, manage for semi primitive motorized in the short term, with a longer term objective

	to semi primitive non motorized.		of managing for semi primitive non motorized through road deactivation and access management following resource development.	
		1.2	Manage the Skookumchuck River as a Backcountry River Corridor consistent with the Backcountry Recreation Guidelines (Table 1.2).	

General Biodiversity

1.	Retain forest and grassland ecological elements and processes, including species richness, distribution and diversity at a low risk.	1.1	Priorities for implementation of the Fire-Maintained Ecosystem Restoration Guidelines (Chapter 3, section 3.10) exist on the Ta Ta-Skookumchuck Range Unit.	I-3

	Objective		Strategy	Landscape Units
		1.2	Initiate road/trail deactivation and rehabilitation in accordance with the access management guidelines (Chapter 3, section 3.12). Priorities for implementation exist on the Ta Ta-Skookumchuck Range Unit.	I-10
2.	Maintain the regional connectivity corridor between the Purcell Wilderness Conservancy and the Top of the World Provincial Park, to serve as habitat linkage for seasonal migration for ungulates and to support the Purcell Wilderness Conservancy.	2.1	Apply the connectivity guidelines within the regional connectivity corridor as indicated in Chapter 3, section 3.3.	
3.	Retain attributes for old growth dependent species and fur bearers.	3.1	In establishing priorities for Old Growth Management Areas, consideration should be given to Spruce Balsam and Western Larch in the upper half of the Buhl Creek drainage.	
4.	Maintain Ponderosa Pine representation in the lower Skookumchuck.	4.1	Initiate controlled fires.	

Fisheries

1.	Maintain wild fish stocks and habitat for Bull Trout and West Slope Cut Throat.	1.1	In establishing priorities for watershed assessments, consideration should be given to the area below the confluence of Buhle and Skookumchuck Creeks and in Sandown Creek.
		1.2	In establishing priorities for managing Bull Trout through application of the appropriate components of the FPC, consideration should be given to the area below the confluence of Buhl and Skookumchuck Creeks.
2.	Rebuild wild fish stocks and habitat for Bull	2.1	Identify and implement strategies to address stream alterations which adversely affect wild fish stocks and

	Objective		Strategy	Landscape Units
	Trout and Burbot in Dutch Creek.		habitats.	
		2.2	Undertake an assessment of fish populations and document the life histories.	
		2.3	Review current fisheries management strategies.	

	Objective		Strategy	Landscape Units
3.	Maintain wild fish stocks and habitat for Cutthroat and Bull Trout in Skookumchuck Creek.	3.1	Undertake an inventory and assessment of fish and fish habitat.	
		3.2	Document fishery which targets Cutthroat Trout.	
		3.3	Review habitat conservation strategies.	

Premier Ridge, Diorite Creek-Premier Face

I-S12

	Objective		Strategy	Landscape Units
	Timber			
1.	Maximize opportunities for timber harvesting, subject to the range of KBLUP objectives and strategies.	1.3	Complete the Enhanced Forest Management Pilot Project in the White/Lussier River area, in conformance with the range of KBLUP objectives and strategies (see Appendix D).	
	Recreation			
1.	Maintain a range of recreation opportunities towards the semi primitive end of the Recreation Opportunity Spectrum.	**1.1**	If industrial roading occurs within the unit, manage for semi primitive motorized in the short term, with a longer term objective of managing for semi primitive non motorized through road deactivation and access management following resource development.	I-4
	General Biodiversity			
1.	Retain grassland ecological elements and processes, including species richness, distribution and diversity at a low risk.	**1.1**	Priorities for implementation of the Fire-Maintained Ecosystem Restoration Guidelines (Chapter 3, section 3.10) exist in the Sheep Creek North and Wolf-sheep Creek (Premier Ridge) Range Units.	I-4
		1.2	Maintain the existing access management program on Premier Ridge. Initiate access management and road/trail deactivation and rehabilitation in accordance with the access management guidelines (Chapter 3, section 3.12). Priorities for implementation exist on the Sheep Creek North Range Unit.	I-4
		1.3	New or existing Christmas tree permits will be reviewed with the goal of concentrating	I-4

			intensive management in the most suitable sites within the permit area.	
2.	Maintain the regional connectivity corridor between the Top of the World Provincial Park and the Purcell Wilderness Conservancy to serve as habitat linkage for the seasonal migration ungulates.	**2.1**	Apply the connectivity guidelines within the regional connectivity corridor as indicated in Chapter 3, section 3.3.	

Wide Ranging Carnivores

1.	Ensure the existing cougar and wolf populations are maintained or enhanced.	**1.1**	Maintain sufficient prey habitat, and, therefore, adequate prey populations.

East Kootenay Trench
I-I01

Objective	Strategy	Landscape Units

Commercial Tourism

1.	Maintain and enhance opportunities for resorts and commercial backcountry recreation.	**1.1**	Provide Crown land, as necessary, for expansion of ski areas and resorts at Radium, Invermere and Fairmont. These actions will be subject to consideration of conservation values, municipal and regional planning, and the provincial land use charter and goals.

Access Management

1.	Ensure the range of objectives and strategies are integrated within the Findlay and Buhl Creek areas, particularly as they relate to access for proposed development.	**1.1**	All proposals for new road development or expansions will be evaluated through either: • an enhanced referral process as described in the Access Management Guidelines, Chapter 3, section 3.12, or • special measures which, because of imminent development, require immediate attention.

General Biodiversity

1.	Retain grassland and forest ecological elements and processes, including species richness, distribution and diversity at a moderate risk.	**1.1**	Priorities for implementation of the Fire-Maintained Ecosystem Restoration Guidelines (Chapter 3, section 3.10) exist in the Dutch-Findlay and Torrent Range Units.	I-12 I-14 I-3
		1.2	Maintain the existing access management program on the Dutch-Findlay Range Unit and the Stoddart Creek area. Develop and implement an access	I-12

	management plan in accordance with the access management guidelines (Chapter 3, section 3.12) for the high elevation grasslands in the Kindersley Creek area.	I-14 I-25 I-30
	1.3 New or existing Christmas tree permits will be reviewed with the goal of concentrating intensive management in the most suitable sites within the permit area.	
	1.4 Support the Nestbox Monitoring Project funded by the CBFWCP for cavity nesting ducks.	
	1.5 Support the Large Mammal Monitoring Project funded by the CBFWCP to aid in developing enhancement plans.	
	1.6 Support the North Stoddart Creek Enhancement Project funded by the CBFWCP.	I-25

Objective	Strategy	Landscape Units
	1.7 Complete the Sharptail Grouse Transplant Feasibility Project funded by the CBFWCP to evaluate suitable sites for re-introduction.	I-12 I-14
	1.8 Support the Elk Habitat Use Project funded by the CBFWCP to monitor radio-collared cow elk.	
	1.9 West Columbia Lake, Lot 7558 should be designated as a Sensitive Area under the FPC.	I-12
2. Maintain the regional connectivity corridor to ensure the north-south connection within the East Kootenay Trench to contribute to ecosystem representation (PP and IDF subzones), to serve as habitat linkage for the seasonal migration of ungulates and to support Kootenay National Park.	**2.1** Apply the connectivity guidelines within the regional connectivity corridor as indicated in Chapter 3, section 3.3.	
	2.2 Human settlement plans, including Official Community Plans, to address and reflect regional connectivity.	
	2.3 Due to the degree of private property, initiate a land purchase strategy to build key east-west habitat links across the East Kootenay Trench.	

		3.3	New or existing Christmas tree permits will be reviewed with the goal of concentrating intensive management in the most suitable sites within the permit area.
4.	Ensure that habitat requirements for red and blue listed and regionally significant species are achieved.	**4.1**	Complete the East Kootenay Badger Study in the area adjacent to the lower portion of the Columbia Marshes, to define current distribution, habitat use patterns, survivorship and reproduction to aid in developing habitat enhancement potential for badgers.

Ungulates

1.	Maintain the abundance of regionally significant elk, moose, mule and white-tailed deer, Rocky Mountain Bighorn Sheep and Rocky Mountain Goats within the sustainable carrying capacity of their habitat.	**1.1**	Complete the Rocky Mountain Trench Elk and Mule Deer Inventory Project to assess the effects of forest ingrowth on forage quantity and quality.

Objective	Strategy	Landscape Units

Wide Ranging Carnivores

1.	Ensure the existing wolf and cougar populations are maintained or enhanced.	**1.1**	Maintain sufficient prey habitat and, therefore, adequate prey populations.

Fisheries

1.	Maintain wild fish stocks and habitats for Burbot in Columbia Lake.	**1.1**	Document Burbot life histories and distribution.
		1.2	Assess potential recreational fishery impacts on stocks and habitat.
		1.3	Pursue a land reserve to enclose the known Burbot spawning area at the south end of the lake.
		1.4	Review fisheries management strategies for Columbia Lake.
2.	Rebuild wild fish stocks and habitat for Bull and Cutthroat Trout and Burbot in the Kootenay River, upstream of Lake Koocanusa.	**2.1**	Undertake population and habitat assessments to develop a management strategy.
		2.2	Review habitat conservation strategies in areas where forest harvesting occurs.
		2.3	Document characteristics of existing fishery.
		2.4	Document the life history of sport fish.

Steamboat-Bugaboo
I-I02

Objective	Strategy	Landscape Units

Settlement

1.	Maintain opportunities for expansion of the resort at Panorama..	1.1	Provide suitable Crown land for Panorama resort expansion, consistent with the ski area agreement for the area.

Recreation

1.	Maintain a range of recreation opportunities from roaded resource land to semi primitive non motorized.	**1.1**	The Upper Dunbar Lakes basin should be designated a Sensitive Area under the *FPC Act*. Maintain opportunities for backcountry recreation by managing the basin for semi primitive non motorized recreation.	I-32
2.	Maintain non-commercial public opportunities for backcountry recreation in the Upper Dunbar Lakes basin.	**2.1**	Commercial Backcountry Recreation applications will be reviewed for their ability to maintain or enhance non-commercial public backcountry recreation opportunities.	I-32

General Biodiversity

1.	Retain forest ecological elements and processes, including species richness, distribution and diversity at a moderate or basic stewardship level.	**1.1**	Support the Small Mammals Project funded by the CBFWCP to develop needed information on the status of the red-tailed chipmunk, the *ruficaudus* subspecies, the Selkirk least chipmunk and the Creston Northern Pocket Gopher.
2.	Maintain the regional connectivity corridor between the Columbia River system and Glacier National Park and between the Columbia system and the West Kootenay through the Horsethief drainage (linking SRMZ units I-S07 and I-S02) to serve as habitat linkage for the seasonal migration of elk and moose and to support the Bugaboos Provincial Park and Glacier National Park.	**2.1**	Apply the connectivity guidelines within the regional connectivity corridor as indicated in Chapter 3, section 3.3.

Kootenay - White River
I-I03

Objective	Strategy	Landscape Units

Recreation

1.	Maintain a range of recreation opportunities from roaded resource land to semi primitive non motorized.	**1.1**	Manage Kootenay, White and Cross Rivers as Backcountry River Corridors consistent with the Backcountry Recreation Guidelines (Table 1.2, Chapter 3, section 3.9.) Apply for non motorized use restriction through Transport Canada.	I-9 I-10

				I-11 I-19 I-21 I-23 I-24
		1.2	Maintain the existing road accessible campsites at Horseshoe Rapids and the Kootenay/White River confluence, and opportunities for additional walk-in/river campsites.	I-19 I-21 I-23 I-24

General Biodiversity

1.	Retain forest and grassland ecological elements and processes, including species richness, distribution and diversity at a low risk.	**1.1**	Mary Anne Creek should be designated as a Sensitive Area under the FPC.	I-11
		1.2	Albert River Cedars should be designated as a Sensitive Area under the FPC.	I-22
2.	Maintain the regional connectivity corridor within the Kootenay River drainage to serve as habitat linkage for the seasonal migration of ungulates and to support Kootenay National Park and the Height of the Rockies, White Swan and Top of the World Provincial Parks.	**2.1**	Apply the connectivity guidelines within the regional connectivity corridor as indicated in Chapter 3, section 3.3.	
3.	Retain attributes for old growth dependent species and fur bearers.	**3.1**	In establishing priorities for Old Growth Management Areas, consideration should be given to a unique mixed stand of Cedar, Ponderosa Pine and Larch in the Mary Anne Creek watershed, for Cedar in the Albert River area and for Spruce and Balsam in the upper Lussier	

			River drainage.	

Objective	Strategy	Landscape Units

Rangeland Ecosystems

1.	Ensure that rangeland attributes within the regional connectivity corridors and high elevation grasslands in the Emily Creek, Home Basin, Marmalade Creek, Mary Anne Creek, Mutton Creek/Nine-Mile Creek/Mount Glenn, Van Nostrand Range and White Knight Peak areas are maintained or enhanced.	**1.1**	Develop and implement an access management plan for high elevation grasslands in accordance with the Access Management guidelines (Chapter 3, section 3.12).

Wide Ranging Carnivores

1.	Ensure the existing wolf populations in the upper Kootenay are maintained or enhanced.	**1.1**	Maintain sufficient prey habitat and, therefore, adequate prey populations.

Fisheries

1.	Maintain wild fish stocks and habitat for Bull Trout, West Slope Cutthroat Trout and Rainbow Trout.	**1.1**	In establishing priorities for watershed assessments, consideration should be given to the White River and tributaries and on Inlet Creek.
		1.2	In establishing priorities for managing Bull Trout through application of the appropriate components of the FPC, consideration should be given to the White River and tributaries.
2.	Rebuild wild fish stocks and habitat for Bull and Cutthroat Trout and Burbot in the Kootenay River, upstream of Lake Koocanusa.	**2.1**	Undertake population and habitat assessments to develop a management strategy.
		2.2	Review habitat conservation strategies in areas where forest harvesting occurs.
		2.3	Document characteristics of existing fishery.
		2.4	Document the life history of sport fish.
3.	Maintain wild fish stocks and habitat for Bull Trout on the White River.	**3.1**	Undertake an inventory and assessment of fish and fish habitat.
		3.2	Review habitat conservation strategies.
		3.3	Explore regulation changes which could be used to limit overfishing.
		3.4	Document the sport fishery.

Lower Dutch - Lavington Creek

I-I04

Objective	Strategy	Landscape Units

Mineral

1.	Accommodate road access for exploration in the middle fork of Findlay Creek.	1.1	Road access through this RMZ unit required for mineral exploration in the middle fork of Findlay Creek (in RMZ I-S11), by way of Doctor Creek, will be accommodated. Roads will be permitted by means of standard regulatory approval procedures. (This access may not be needed if a route within I-S11 is selected).

General Biodiversity

1.	Retain forest and rangeland ecological elements and processes, including species richness, distribution and diversity.	**1.1**	Priorities for implementation of the Fire-Maintained Ecosystem Restoration Guidelines (Chapter 3, section 3.10) exist in Findlay and Lavington Flats.	I-12
		1.2	Initiate access management and road/trail deactivation and rehabilitation in accordance with the access management guidelines (Chapter 3, section 3.12). Priorities for implementation exist on Findlay and Lavington Flats and the south end of Fir Mountain (Emily Creek).	I-12
2.	Maintain the regional connectivity corridor between the Columbia River system and the Purcell Wilderness Conservancy to serve as habitat linkage for the seasonal migration of ungulates and to support the Purcell Wilderness Conservancy.	**2.1**	Apply the connectivity guidelines within the regional connectivity corridor as indicated in Chapter 3, section 3.3.	

Wide Ranging Carnivores

1.	Ensure the existing wolf and cougar populations throughout the unit are maintained or enhanced.	**1.1**	Maintain sufficient prey habitat and, therefore, adequate prey populations.

Fisheries

1.1	Maintain wild fish stocks and habitat for Rainbow Trout by addressing competition by Brook Trout in Whitetail Lake.	**1.1**	Document Brook Trout spawning sites.

Objective		**Strategy**		**Landscape Units**
		1.2	Explore options to eliminate Brook Trout eggs and/or fry in the gravel, for example through scarification, capping with large cobble/boulders or removing spawners off of spawning grounds.	
2.	Rebuild wild fish stocks and habitat for Bull Trout and Burbot in Dutch Creek.	**2.1**	Identify and implement strategies to address stream alterations which adversely affect wild fish stocks and habitats.	
		2.2	Undertake an assessment of fish populations and document the life histories.	
		2.3	Review current fisheries management strategies.	

3.	Maintain wild fish stocks and habitat for Cutthroat and Bull Trout in Findlay Creek.	**3.1**	Undertake an assessment of fish and fish habitat.
		3.2	Review habitat conservation strategies.
		3.3	Document the fishery and harvest of various sport fish.
		3.4	Explore regulation changes which could be used to limit overfishing.

Appendix A: Community Watersheds

Note: as the list of Community Watersheds under the Forest Practices Code will evolve over time, this list represents existing community watersheds as of September, 1996. All other watersheds that are used for domestic water purposes are classified as Domestic Watersheds (see Chapter 3, section 3.7).

INVERMERE I-01

Water Source Community/Water Users Organization

Taynton Creek Panorama Resort Ltd.

Goldie Creek District of Invermere

Cold Spring Creek Fairmont Hot Springs Resort

Tatley Creek Columbia Lake Indian Band

Luxor Creek Spur Valley Improvement District

Macaulay Creek Edgewater Improvement District

Pye Creek Timber Springs Community Association

INVERMERE I-02

Water Source Community/Water Users Organization

Forster Creek Village of Radium

INVERMERE I-03

Water Source Community/Water Users Organization

Sophy Creek Columbia Lake Indian Band

Madias Creek Columbia Lake Indian Band

Within Kootenay Nation Park

Water Source Community/Water Users Organization

Dry Gulch Creek Dry Gulch WUC

Palmer Creek Radium Hot Springs Resort

Appendix B: Protected Areas

The following is a brief description of the new provincial parks that are located within the Invermere Forest District. As well, there is a statement of management intent which defines the proposed management emphasis for the area. The new provincial parks will be managed in accordance with the general management direction outlined in Chapter 4. BC Parks will be undertaking a planning process to develop Park Masterplans for each of the new provincial parks. There will be opportunities for public input and review of the Park Masterplans. An indication of planning priority for each of the new parks is identified in Chapter 4.

Bugaboo Park Extension

13,646 hectares

The government decision on new protected areas resulted in creating an extension to the existing Bugaboo Provincial Park. The area is located in the Purcell Mountains, 40 kilometres west and north of Invermere. The new addition to the park is a very spectacular area of steep mountain spires and surrounding glaciers.

The Bugaboo Park Extension has very high wilderness recreation values for mountaineering and hiking. Climbing Opportunities in the Bugaboo Spires are world class. As a result, the management emphasis will be on recreation.

East Purcells Provincial Park

36,938 hectares

The new East Purcells Provincial Park, together with the Purcell Wilderness Conservancy and the West Purcells Provincial Park in the West Kootenay, protect one of the largest intact mountain ecosystems in the south half of the province. In so doing, the new provincial park will preserve the viability and diversity of the existing Purcell Wilderness Conservancy. The area is located in the Purcell Mountains 20 kilometres west and south of Invermere. It is an area of high mountains with extensive alpine grassland in some areas with a large number of avalanche paths.

The area is world famous for its elk populations and wilderness elk hunting. It also provides important grizzly bear and mountain goat habitat, extensive summer range for mule deer and elk, as well as containing important riparian habitat. The new provincial park also supports black bear, moose, Pileated Woodpecker and west slope cutthroat trout.

The East Purcells Park contains very high wilderness recreation values for hunting, fishing, hiking, horseback trips and wildlife viewing. The area also includes the heritage values of the Earl Gray Trail and Cabin.

As a result of the significant natural values within the park, the management emphasis will be on conservation.

Height of the Rockies Provincial Park

53,964 hectares

The new Height of the Rockies Provincial Park comprises a large part of what was the Height of the Rockies Wilderness Area, running along the height of land adjacent to the Alberta border in both the Cranbrook and Invermere Forest Districts. It also borders the newly extended Elk Lakes Provincial Park and creates a linkage with Banff National Park and Peter Lougheed Park in Alberta.

The new provincial park contains very high wildlife values, including the largest concentration of mountain goat in the world. As well, it contains key habitat for grizzly bears, wolves, elk, Rocky Mountain Big Horn Sheep and trophy cutthroat trout.

There are also significant recreational values in the new Height of the Rockies Provincial Park, including important wilderness and backcountry recreation opportunities. The new park contains prehistoric trails and was part of the route of the Palliser expedition and the Overlanders.

As a result of the existence of both significant recreation values, as well as very high wildlife values, the management emphasis will be to seek balance between conservation and backcountry recreation.

Appendix C: East Side Columbia Lake Wildlife Management Area

Background

The March 1995 government decision on the Kootenay/Boundary Land Use Plan identified the need to establish a Wildlife Management Area (WMA) on the East Side of Columbia Lake to maintain critical wildlife habitat. The government decision directed government staff to establish boundaries and a management plan for the area. While the WMA will be administered by BC Environment, the land will continue to be within the Provincial Forest and, therefore, MoF and the Chief Forester will also have legal responsibility in the area. As a result, the area will effectively be managed jointly by the two government agencies.

The east side of Columbia Lake is acknowledged as important and critical wildlife habitat. The area was first designated as a "game reserve" in May 1957. Additions have been made to the area in recent years through land purchases and trades.

Objective

The primary management objective of the Columbia Lake Wildlife Management Area is to ensure that diverse ecological characteristics and values, including rare and endangered flora and fauna, as well as important Heritage sites, are maintained and that such management is integrated with resource development activities, consistent with the KBLUP objectives and strategies.

Where technically feasible and biologically desirable, habitat enhancement designed to maintain and increase the carrying capacity of the forage base will be conducted. Operational plans will be designed to create a revolving long term vegetative mosaic consisting of a range of types and age classes of forest cover. Forage enhancement will be geared to preferred natural vegetation for the species present in the respective habitat types and terrain. The emphasis of habitat management will be maintenance of biodiversity; ensure special attention to rare or threatened species and where possible, to optimize benefits for a wide range of species.

WMA Boundary

Map 2 outlines the boundary for the WMA. The area includes the east side of Columbia Lake, the wetlands and the waterfowl sanctuary at the north end of the lake, the wetlands bordering the private land at the south end of the lake, and a portion of the eastern shoreline of the lake.

Appendix D: Enhanced Forest Management Pilot Project

A. Background

The Enhanced Forest Management Pilot Project was initiated in September, 1995 as a co-operative effort between industry, the Ministries of Forests and Environment, Forest Renewal BC, labour and the academic community. Initiation of the pilot was the main recommendation of a report entitled *A Forest Management Strategy and Action Plan for British Columbia* which was endorsed by the Forest Sector Strategy Committee. Overall, the report determined that there was a need to develop a forest management strategy for the province to:

- address the "falldown" in timber supply as the province makes the transition from unmanaged to managed forests,
- reflect changing public expectations for management of non-timber values (water, habitat, recreation, biodiversity), and
- mitigate the impact of Annual Allowable Cut (AAC) reductions on the forest sector resulting from the Protected Areas Strategy, Timber Supply Review and Forest Practices Code.

In January, 1996 the Invermere Forest District was selected as one of two areas to host the pilot project by the broadly-based provincial Steering Committee that was established to guide the process. McMillan Bloedel's TFL 39 on Vancouver Island was selected as the other provincial pilot area. The Invermere Forest District formally initiated the pilot project in March, 1996 and following several meetings with the provincial Steering Committee and Technical Advisory Committee prepared the project plan in order to clarify the pilot project's scope and deliverables.

B. Pilot Project

The goals of the pilot project will be to:

- focus FRBC, MOF and industry expenditures o the forest land base,
- help quantify the benefits of FRBC, MOF and industry funding on the forest land base,
- operationalize the KBLUP objectives and zoning,
- be coordinated with the Nelson Forest Region AAC Mitigation Strategy,
- empower forest managers to develop a dynamic local forest management strategy with emphasis on increased timber production in suitably zoned areas,
- fully develop the potential short and long-term productivity of the available forest land base within the parameters of existing land use plans and the Forest Practices Code, and
- explore the biological effectiveness, economic efficiency and political realities of employing enhanced forest management strategies.

C. Pilot Project Study Area

The White/Lussier River drainage will serve as the study area for the project (see Map 2). The area encompasses approximately 20 percent of the Invermere TSA and is located in a drainage that supports a wide variety of resource activities. Both of the District's major licensees, as well as, the Small Business Program have active harvesting operations within the area. A diversity of physical attributes exists ranging from low elevation native grasslands to high elevation bare rock and tundra. The tree species and age classes are also diverse though a significant portion of the area was affected by three major fires that occurred in 1985.

D. Public Involvement/Communication

A critical component of the Enhanced Forest Management Pilot Project is to ensure there are opportunities to involve local residents in a meaningful way and to adequately communicate the activities surrounding the pilot project in an open manner. Support from the general public is an essential element in achieving long-term success with the management strategies that will be adopted and ultimately applied across the Invermere Forest District as a whole.

The broad objectives of the Public Involvement/Communication Plan are to:

- maintain open lines of communication with the general public, interest groups, and professional and technical community within the Invermere Forest District that allow for a clear enunciation of the vision, objectives and accomplishments of the Enhanced Forest Management Pilot Project,
- regularly inform and update the general public through presentations, formal information sessions, newsletters, news releases, and timely responses to individual inquiries, should there be sufficient interest expressed a public advisory group could be formed as a mechanism for ensuring that the public has an opportunity to actively participate.

APPENDIX E

Invermere: Rationale for size, boundary locations and biodiversity emphasis assignments, as outlined in Chapter 3, section 3.2 of the KBLUP implementation strategy.

Landscape Unit #	Landscape Unit Name	BEO Assignment	Rationale for Size and Boundary Location	Rationale for BEO Assignment
1	Findlay	High	Height of land for Findlay Creek headwaters and mainstem	Old growth larch, connectivity, remoteness/wildland attributes, habitat diversity, fisheries values
2	Buhl - Bradford	High	Bradford drainage included to meet connectivity corridor requirements	Regional connectivity, caribou, old growth, fisheries values, remoteness/wildland attributes
3	Skookumchuck - Torrent	PP=I, IDf & Others=L	Kootenay River boundary to East; major part of Skookumchuck and all of Torrent Creek	PP subzone representation, regional connectivity, fisheries values, winter range, grassland ecosystem, habitat diversity
4	Premier - Diorite	PP=I, Others=L		PP subzone representation, regional connectivity, winter range, grassland ecosystem
5*	Lussier - Coyote	ESSF=I, Others=L	2 main stems of Lussier River (W boundary) and Coyote Creek drainage included	Regional connectivity, old growth, fisheries values, high elevation winter range for R.M.sheep, alpine habitat
6	Blackfoot - Thunder	Low	Height of land around Blackfoot and Thunder Creek drainages	Connectivity, R.M. goats, R.M. sheep
7	East - Middle White	Intermediate	Height of land around East and Middle White River drainages	Regional connectivity, grizzly bear, fisheries values, old growth, R.M. sheep and goats
8	North White	Intermediate		Regional connectivity, grizzly bear, fisheries values, old growth, alpine habitat

9*	Grave	ESSF=L, Others=I	Height of land between North White, Grave & Elk drainages; White River to the west	Regional connectivity, IDFun subzone representation, R.M. goats
10*	Nine Mile - Moscow	ESSF + ICH=I, Others=L	Kootenay & White Rivers as borders; Nine Mile and Moscow drainages included	ICH mk1 and ESSFwm subzone representation
11	Kootenay	High	Kootenay River East border; topographic divide between Columbia Lake & Kootenay River	Regional connectivity, R.M. bighorn sheep and goats, old growth (Mary Ann Crk.), grizzly bear, winter range, alpine habitat
12	Doctor - Fir	ESSF=I, Others=L	Doctor Creek headwaters and mainstem; topographic divide between Findlay and Dutch Creek drainages	Regional connectivity, grassland ecosystem, winter range, habitat diversity, fisheries values, old growth
13*	East Columbia	Intermediate	Combines Madias & Tatley Creek along with drainages to the east of Columbia Lake	Rare plants, regional connectivity, old growth, grizzly, bighorn sheep, winter range, ecological reserve, grassland habitat, alpine habitat, fisheries values (Burbot/Kokanee)

Landscape Unit #	Landscape Unit Name	BEO Assignment	Rationale for Size and Boundary Location	Rationale for BEO Assignment
14	Brewer - Dutch	ESSF=L, MS + Others=I	Combines headwaters and mainstem of Brewer and Dutch Creeks	Regional connectivity, MSdk subzone representation, fisheries values, R.M. goats (Brewer Crk.), habitat diversity, winter range
15	Toby	Intermediate	Headwaters and main and south tributary of Toby Creek; also including Delphine Creek	Connectivity, grizzly bear, habitat diversity, very high population of R.M. goats, remoteness/wildland attributes, winter range
16	Jumbo	High	Smaller Landscape	Connectivity, grizzly bear,

			Unit reflects unique ecosystem values of the area; all of Jumbo Creek included	habitat diversity, ESSFwm subzone representation, R.M. goats
17*	Goldie	High	Community watershed with unique ecosystem values	Community watershed, alpine habitat value
18*	Invermere	Low	Columbia River and Windermere Lake west borders; divides between Goldie & Brewer Creeks	Winter range, connectivity, wetlands interface, grassland habitat
19	Fenwick	ESSF=L, MS=I	Height of land around Fenwick Creek drainage	Connectivity, grizzly bear, winter range, old growth, alpine habitat
20*	Palliser	ESSF=L, MS=I	All of Palliser River drainage and tributaries	Regional connectivity, fisheries values, IDFun subzone representation
21	Cochran	ESSF + Others=L, MS=I	All of Cochran Creek drainage; Kootenay River as west border	Connectivity, winter range, fisheries values
22	Albert	High	All of Albert River drainage; East border is the Height of the Rockies Provincial Park	Regional connectivity, grizzly bear, old growth
23	Cross	High	All of Cross River drainage and tributaries; includes area into Mt. Assiniboine Provincial Park	Connectivity, grizzly bear, old growth
24	Pedley	ESSF + Others=L, MS=I	Long, trench-like unit that extends along the Kootenay River, includes part of Kootenay National Park	Connectivity, old growth, fisheries values, winter range
25*	Shuswap - Windermere	Low	Shuswap and Windermere Creek drainages that flow into Columbia Lake; extension of	Connectivity, R.M. sheep, winter range, fisheries values

			Landscape Unit into Kootenay National Park	
26	Horsethief	ESSF + Others=L, MS + IDf=I	Upper Horsethief Creek drainage and main tributaries	Fisheries (grottos), spring bear habitat, MSdk representation, regional connectivity, remoteness/wildland attributes
27*	Forster	Intermediate	Upper and middle Forster Creek drainage; community watershed	Connectivity, alpine habitat, communuty watershed
28	Frances	Intermediate	Upper Frances Creek drainage	Old growth, grizzly bear, alpine habitat
29*	Steamboat - Cartwright	ESSF + Others=L, IDf=I	Landscape Unit parallels Steamboat Mountain; includes Cartwright Lake	IDF subzone representation,winter range, connectivity
30*	Kindersley - Macaulay	ESSF + Others=L, IDf=I	Height of land around Kindersley Creek into Columbia River; includes portion of Kootenay National Park	Winter range, remoteness/wildland attributes, R.M.bighorn sheep, R.M.goats, alpine habitat, unique habitat feature(goat lick)

Landscape Unit #	**Landscape Unit Name**	**BEO Assignment**	**Rationale for Size and Boundary Location**	**Rationale for BEO Assignment**
31	Bugaboo	Intermediate	Height of land around Bugaboo headwaters and mainstem	Grizzly bear, alpine habitat, connectivity, old growth
32*	Dunbar - Templeton	Intermediate	Combines all of Dunbar and Templeton drainages	IDFun subzone representation, old growth, fisheries values (Cartwright Lakes), unique habitat features (Shangrila, Salmon Falls)
33	Luxor	Intermediate	All of Luxor and Pinnacle tributary drainages; Luxor community watershed	Connectivity, goats, alpine habitat
34*	Bobbie Burns	Low	TFL #14; includes middle and upper	Grizzly bear, old growth, moose winter range,

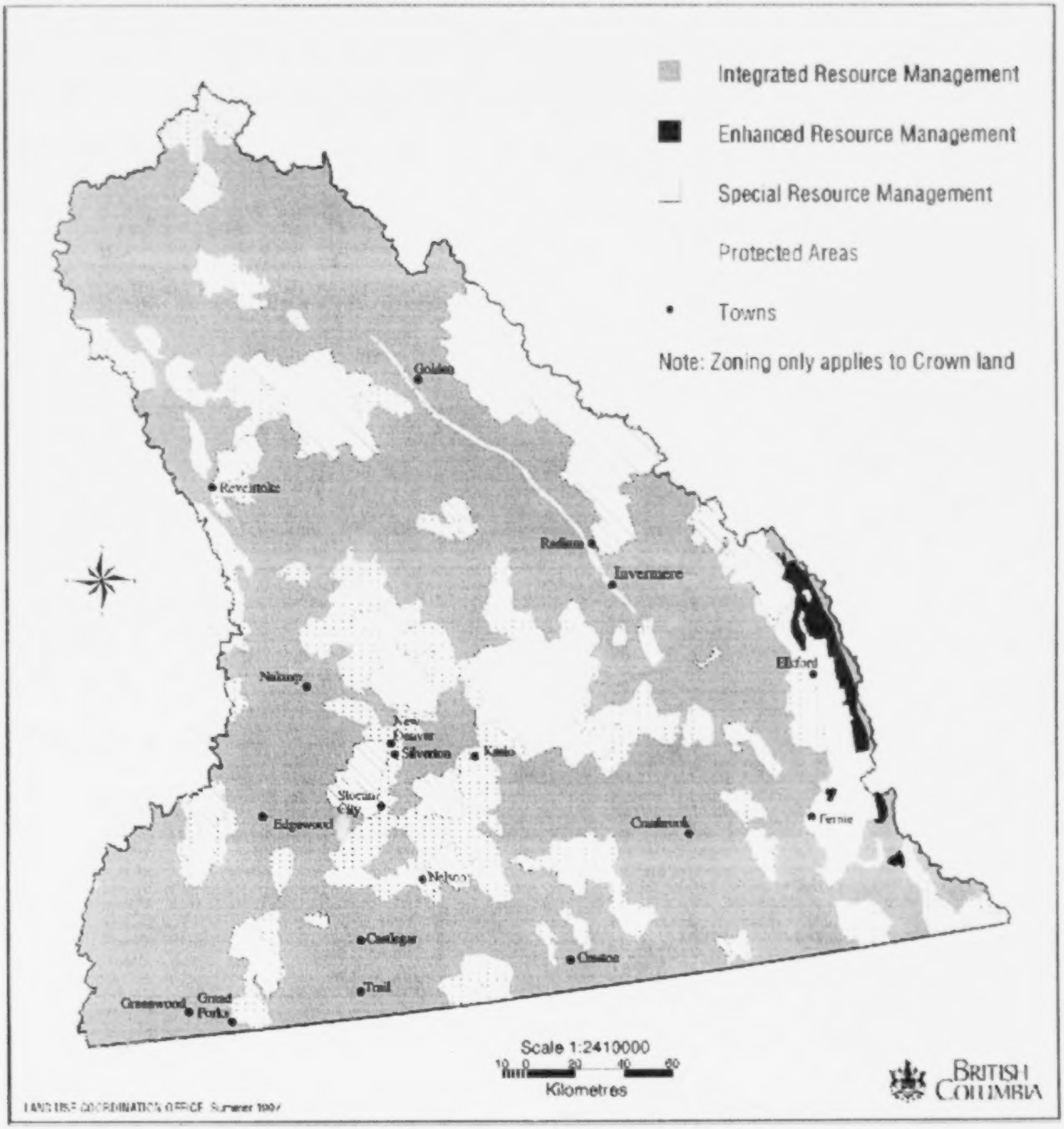
			Bobbie Burns and main tributaries	alpine and avalanche habitat
35*	Lower Spillimacheen	ESSF + Others=L, MS=I	TFL #14; lower Spillimacheen almost down to confluence with Columbia River	Winter range, regional connectivity
36*	McMurdo - Fraling	Low	Bounded by TFL #14 legal boundary and Kootenay National Park; McMurdo & Fraling tributaries to Columbia River	Winter range
37	Upper Spillimacheen	ESSF + Others=L, MS=I	TFL#14; upper Spillimacheen including headwaters and main tributaries	Regional connectivity to G.N.P., grizzly bear, alpine habitat
38	Twelve Mile	Intermediate	TFL #14; height of land between Spillimacheen and Columbia River drainages; including Twelve Mile Creek drainage	ICHmk1,IDF, MSdk representativeness, winter range, wetlands interface

Back to Table of Contents

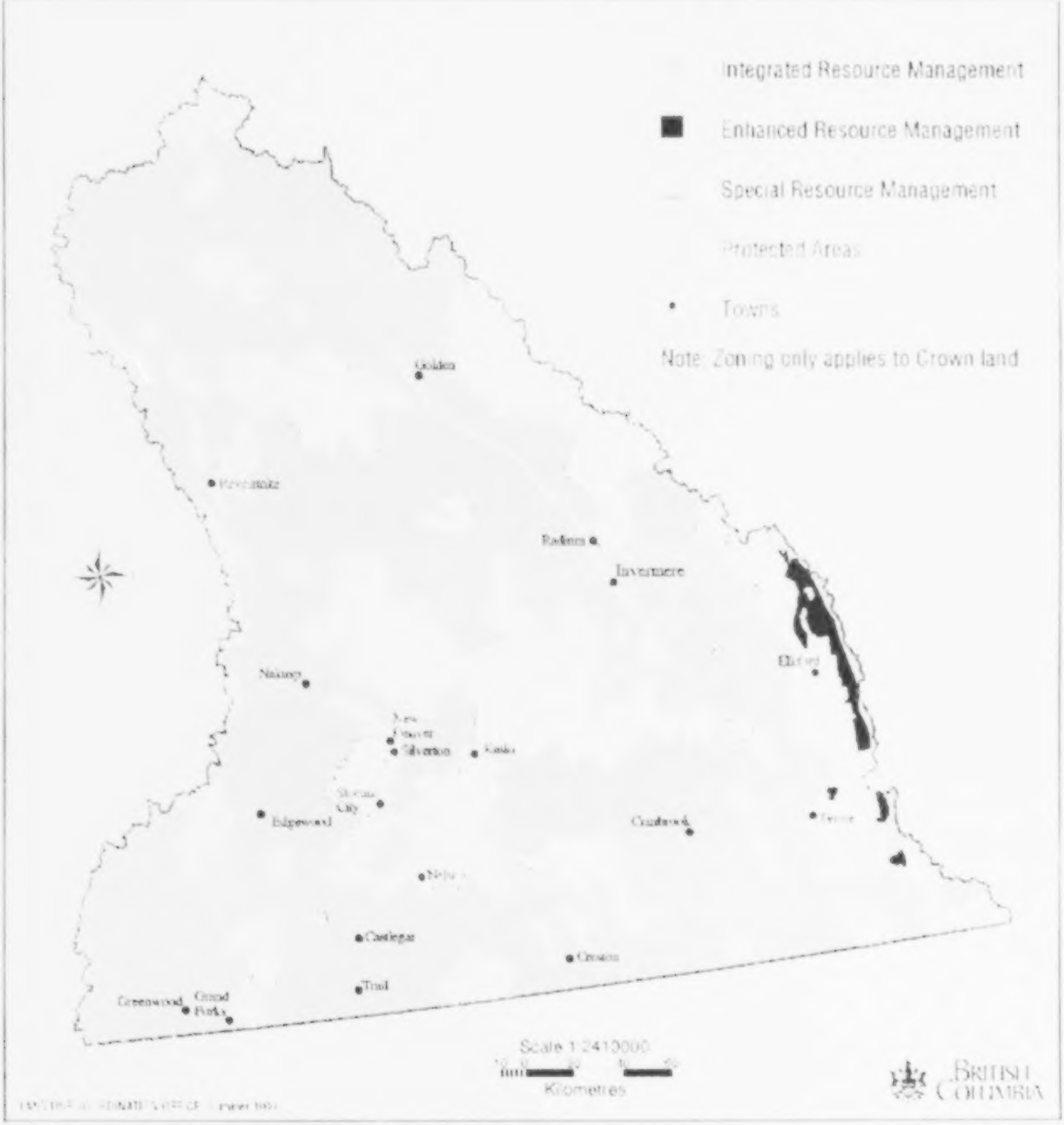
•Top •Copyright •Disclaimer •Privacy •Government of British Columbia

W3C HTML 4.01

Kootenay Boundary Land Use Plan
Resource Management Zones


Integrated Resource Management
Enhanced Resource Management
Special Resource Management
Protected Areas
Towns
Note: Zoning only applies to Crown land
Golden
Revelstoke
Radium
Invermere
Elkford
Nakusp
New Denver
Silverton
Kaslo
Slocan City
Edgewood
Cranbrook
Fernie
Nelson
Castlegar
Creston
Trail
Greenwood
Grand Forks
Scale 1:2410000
10 0 20 40 60
Kilometres
LAND USE COORDINATION OFFICE Summer 1997
BRITISH COLUMBIA

Kootenay Boundary Land Use Plan Resource Management Zones


Integrated Resource Management
■ Enhanced Resource Management
Special Resource Management
Protected Areas
• Towns
Note: Zoning only applies to Crown land
Golden
Revelstoke
Radium
Invermere
Elkford
Nakusp
New Denver
Silverton
Kaslo
Slocan City
Edgewood
Cranbrook
Fernie
Nelson
Castlegar
Creston
Trail
Greenwood
Grand Forks
Scale 1:2410000
Kilometres
British Columbia

APPENDIX 22.1 Management of Coal-bearing Lands

Coal-bearing lands in the East Kootenays are almost entirely within the integrated land base in the East Kootenay Land Use Plan (EKLUP). This includes a significant proportion of the higher-priority areas for future coal mining, which are within the Enhanced Resource Development Zone for Coal (ERDZ-C). However, the large majority of the ERDZ-C lands are not within the SRMMP area (note that all ERDZ-C lands are within the overall Resource Evaluation Area).

All coal-bearing lands in the SRMMP area, and also in the larger Resource Evaluation Area, will continue to be managed according to basic policy for subsurface resources, as specified in the EKLUP. In other words, all coal-bearing lands outside of protected areas are available for exploration and development, subject to the statutory approval mechanisms of the day. The intent is to provide certainty for investors and to protect and create jobs in mining.

As outlined in the EKLUP and the Kootenay-Boundary Land Use Plan Implementation Strategy (KBLUP-IS), the ERDZ-C designation represents a higher emphasis on the coal resources and a priority commitment to activities related to their development. The practical implementation of the ERDZ-C designation has not been adequately addressed to date, but may be dealt with during a future government-industry project. The intent of the project would be to deliver enhanced security, over and above the EKLUP policy and the general guidance provided by the KBLUP-IS (below), for the coal-mining industry and the Elk Valley communities.

In the meantime, those small coal-bearing areas which are in both the SRMMP and the ERDZ-C lands (see Map B.3.1.2) will be managed in a manner consistent with KBLUP-IS resource management objectives and guidelines. Specifically, it is recognized that in Coal ERDZ lands ecosystem function may be temporarily compromised, but that long-term environmental quality will be addressed through reclamation and mitigation, as determined by the permitting process.

APPENDIX 22.2 Mineral Two-zone System Brochure

The two-zone system for mineral exploration and mining in BC is reflected in Resource Objectives 3.1.1 and 3.1.2 of the SRMMP. The Ministries of Energy and Mines and Sustainable Resource Management published a brochure describing the two-zone system in 2003. The brochure provides background on the two-zone system and legislation and on their implications for land use planning and permitting. It may be found at the government website given below, or by contacting the offices of either ministry.

http://www.em.gov.bc.ca/Mining/Two-Zone/Two_Zone_Brochure.pdf

BRITISH
COLUMBIA
Ministry of Energy and Mines
Ministry of Sustainable
Resource Management

A Two-Zone Land Use System for Mineral Exploration and Mining in BC

Introduction

The Province of British Columbia made a commitment to work aggressively to revitalize the province's mineral exploration and mining industries. Investment in mineral exploration and mining is fundamental to a strong, competitive and vibrant provincial economy. A key factor in attracting investment is certainty regarding access to land for development.

In the past, numerous land designations derived through land use planning or legislation have created significant uncertainty for mineral investors. This, combined with other factors, such as resource prices, has contributed to a serious decline in mineral exploration in the province.

To increase investor confidence a new "two-zone" land use system for mineral exploration and mining has been created to clearly define lands as either open or closed to exploration and mining. While this concept is not new, its recent confirmation in legislation demonstrates that B.C. is open to mineral development.

The two-zone system is meant to increase certainty about land use for mineral exploration and mining, and will not limit treaty negotiations or settlements.

This paper provides background on the two-zone system and legislation and on their implications for land use planning and permitting. Additional information on implementation of the two-zone system will be maintained on the Ministry of Sustainable Resource Management and Ministry of Energy and Mines websites.

Background

Mineral resources, which include coal for this discussion, present unique challenges for land use planning and resource management that require a different approach than those used to manage other natural resources and values:

- ➢ minerals are hidden in the subsurface,
- ➢ mineral deposits are site-specific and immovable and must be developed where they are found, and
- ➢ mines offer exceptionally high resource value from a very small portion of the provincial land base.

Mineral exploration and mining are financially risky and capital intensive businesses that largely occur on Crown land with benefits accruing to the Crown and to local communities through jobs and taxes. As a result, mineral development can be viewed as a partnership between the owner of the resources (i.e. the Province) and the developer (i.e. the minerals sector).

In order to optimize returns from our mineral resources, the Province must provide the minerals sector with secure access to the land base for exploration. The two-zone system for minerals provides that security.

The Province will continue to uphold environmental standards. The *Mines Act* and its Mineral Exploration Code, *Environmental Assessment Act* and other legislation are designed to ensure impacts on other resource values and land uses are minimized.

"Two Zones" - What Are They?

Every strategic land use plan approved in British Columbia to date confirms that all lands outside of protected areas are open to mineral exploration and development, subject to applicable mineral legislation. This concept is the basis of the two-zone system. However, over the past decade the complex land zoning system that has evolved from these plans has eroded certainty that reasonable access for mineral development outside of protected areas would indeed be provided.

In addition, there is confusion among many stakeholders regarding the application to the minerals sector of the growing number of land designations derived from other legislation, such as the Forest Practices Code. In turn, the minerals sector is concerned that management tools designed for other resources may be inappropriate for managing its activities.

To ensure clarity, the Province has confirmed in legislation a two-zone system for mineral exploration and mining. The two-zone system ensures mining applications are considered, subject to all applicable laws, anywhere but in a park, ecological reserve, protected heritage property or an area where mining has been prohibited by an order under the *Environment and Land Use Act.*

This system is consistent with government commitments to provide greater access to Crown land and resources, to stimulate mineral exploration in BC and to revitalize the economy.

Legislation

In May, 2002, Section 14 of the *Mineral Tenure Act* was amended by Bill 54 to include the following provision[1]:

(5) Unless the location is one of the following, a land use designation or objective does not preclude application by a recorded holder for any form of permission, or approval of that permission, required in relation to mining activity by the recorded holder:
(a) an area in which mining is prohibited under the *Environment and Land Use Act;*
(b) a park under the *Park Act* or the *Park (Regional) Act*;
(c) a park or ecological reserve under the *Protected Areas of British Columbia Act*;
(d) an ecological reserve under the *Ecological Reserve Act*;
(e) a protected heritage property.

This amendment creates the following two zones for mineral activities:

***"Mineral Zone"*:** Land open to mineral and coal exploration, tenure acquisition and mine development, including suitable access required to undertake these activities, subject to appropriate legislation.

***"Protected Zone"*:** Crown land closed to mineral development through either legislation or order-in-council, as identified in Section 14 (5) (a) through (e) of the *Mineral Tenure Act.*

Mineral zone lands include many different designations such as special, general or enhanced resource management zones; old growth management areas; riparian management zones; wildlife habitat areas; forest ecosystem networks; access management areas; wildlife management areas; wildland or wilderness areas. Mining-specific legislation and environmental regulatory requirements will be applied to ensure high standards of work. Other legislation will continue to apply.

---

[1] In Section 14 (5), "*the location*" refers to the location of a mineral tenure on the ground; "*recorded holder*" refers to the owner of a mineral title.

Implementing the Two Zone System:

Protected Zone: When a new protected area is established, any existing mineral claims and all mineral activities within the zone will be suspended, unless they are subject to specific exemption provisions. Where appropriate, compensation negotiations will be initiated with affected tenure holders.

Mineral Zone : Mineral tenure acquisition is permitted throughout the mineral zone, subject to the *Mineral Tenure Act* (or the *Coal Act* for coal resources). The Ministry of Energy and Mines (MEM) administers exploration and development of mineral resources through a single-window permitting process. The two-zone system does not change the permitting system or environmental standards for mineral activities.

The *Mines Act, Mineral Tenure Act* and related performance-based codes of practice, regulations and guidelines remain the primary permitting, compliance and enforcement instruments for mineral activities. Authorizations required from other agencies, for example *Forest Practices Code of British Columbia Act* special use permits or *Forest Act* cutting permits, will be facilitated through the single window administered by MEM.

Mining activities in the mineral zone lands remain subject to the *Mines Act*, and, where applicable, the *Environmental Assessment Act* as well as all required environmental regulations and approvals. Broad public consultation occurs as applicable under these acts.

Additional details on mine permitting can be found on the Province of British Columbia website at:
Ministry of Energy and Mines
www.em.gov.bc.ca/Mining/MinePer
Environmental Assessment Office
www.eao.gov.bc.ca

Implications for Other Resources

The legislated two-zone system for minerals must be addressed in the context of broad resource management direction contained in land use plans. Any resource management objectives and strategies developed in new plans will be required to accommodate the access to land provisions for exploration and mining established in the two-zone system.

MEM will consider site-specific information on other natural resource values, guidance from approved land use plans and the recommendations of other permitting agencies in its review of permit applications for mineral activities. Reviews will be conducted in a timely manner.

The numerous land designations within the mineral zone reflect the wide range of other resources potentially present in a mining area and the varying sensitivities of those resources to industrial development. Mining proponents must plan their work to minimize impacts to these other resources. During exploration there is generally greater flexibility to adjust activities to avoid impacts. However, flexibility to avoid conflict with other resources becomes limited as exploration advances and mining begins.

Decisions on how impacts are to be prevented or mitigated are made in the permitting process and reclamation plans are required. Where disturbances to other resources cannot be avoided, temporary or even permanent impacts may occur. It is important to recognize that these higher impact and higher cost mineral activities are closely scrutinized by government and occur only when there is a strong potential for successful development and for social and financial benefit from mining. Where permit conditions cannot reasonably mitigate mining impacts, through seasonal or other restrictions, it may be necessary to change or where possible, to find alternate sites for land designations (e.g. old growth management areas, wildlife habitat areas).

Continual Improvement

Integrating exploration and mining activities into land designations that are primarily intended to manage surface values will not be without challenges. Reduced levels of exploration activity in recent years have provided little opportunity to gain experience with this integration. Each exploration site has unique characteristics. There is currently no commonly accepted single best management practice that will accommodate mineral activities in all areas such as old growth management areas, wildlife habitat areas or areas with specific timber-related visual quality objectives. The Mineral Exploration Code is being revised to introduce results-based provisions to address this situation.

The Ministries of Energy and Mines, Water Land and Air Protection, and Sustainable Resource Management will monitor how mining activities are being integrated with other resource values and will communicate this experience with stakeholders from time to time to assess and build confidence in the two-zone system.

- ✓ Industry proponents will benefit from this information sharing in planning and carrying out their activities.
- ✓ Government staff will recognize a wider range of tools is available for land planning and resource management.
- ✓ Participants in land use planning processes will benefit by understanding how mineral activities are integrated with other resources.
- ✓ Investors will see that sustainable resource management is being carried out in British Columbia.

Monitoring and communication will continually improve certainty for mineral investment and in managing mineral activities to conserve other values.

For More Information:

For more information about the two-zone system for minerals and related legislation for mineral exploration and mining in BC, please contact either of the following.

Ministry of Sustainable Resource Management
Graeme McLaren
Manager, Minerals Oil and Gas
Economic Development Branch
PO Box 9367 Stn Prov Govt
Victoria, BC V8W 9M3
Ph: (250) 953-3574
Fax: (250) 356-0338
Email: graeme.mclaren@gems7.gov.bc.ca
Web: www.gov.bc.ca/srm

Ministry of Energy and Mines
Greg McKillop
Director, Mineral Policy and Program Development
Policy and Legislation Branch
PO Box 9318 Stn Prov Govt
Victoria, BC V8W 9N3
Ph: (250) 952-0501
Fax: (250) 952-0271
Email:
greg.mckillop@gems3.gov.bc.ca
Web: www.gov.bc.ca/em

Information on the two-zone system for minerals is available online at:
srmwww.gov.bc.ca/rmd/ecdev/mog/twozone/
or
www.em.gov.bc.ca/Mining/Two-Zone/two_zone_system.htm

For related information, view a brochure on "*Special Management Zones and the Mineral Sector*" at:
www.em.gov.bc.ca/mining/landuse/landusegraphics/smz%20brochure.pdf

APPENDIX 22.3 Petroleum Resource Appraisal of the SRMMP Resource Evaluation Area

(M. Hayes, Ministry of Energy and Mines, 2003)

Summary:

- **Very high hydrocarbon resource potential.**
- **Potential oil resources of 88 million barrels of oil.**
- **Potential gas resources of 1.3 trillion cubic feet.**
- **High potential for coalbed methane**

Discussion:

The Southern Rocky Mountain Management Plan (SRMMP) resource evaluation area[1] in the southeast corner of BC is located over an area considered to hold prime natural gas and oil potential. Oil and gas seeps occur throughout the area and were the focus of wildcat drilling in the early 1900's. Currently there are 4 recognized gas pools in the area that represent up to 600 BCF of carbon dioxide (CO_2)-rich gas. A total of nine conventional hydrocarbon plays are identified within the SRMMP resource evaluation area. However, the area remains relatively unexplored. Since 1950, only 20 wells have been drilled in this area and significant potential remains.

The Kishenehn oil play makes up the bulk of the oil potential in the SRMMP resource evaluation area, contributing at least 64 million barrels (MMBO) to the overall oil resource potential. The play with the largest gas potential is the Waterton Rundle/Wabamun play. It is well defined in Alberta where several analog fields (Waterton, Pincher Creek, etc.) have been discovered with cumulative original gas in place (OGIP) reserves of more than 5 trillion cubic feet (TCF). Potential for this play within the confines of the SRMMP resource evaluation area is estimated to range from 280 BCF to 1.5 TCF. This large gas potential must be tempered with a reminder that a high percentage of CO_2 content is expected along some trends.

Hydrocarbon Plays of Southeastern British Columbia

PLAY GAS	TOTAL PLAY AREA	PLAY POTENTIAL	PLAY AREA IN BC	BC PLAY POTENTIAL		BC % OF PLAY
	ha	106m3	ha	106m3	BCF	
Waterton Colorado	3449092	27600	151744	1214.3	42.9	4.4%
Kishenehn gas	104589	17883	17540	2999.1	105.9	17.0%
Waterton Run./Wab.	3028589	531000	150448	26377.9	931.5	4.9%
MacDonald Paleo	390973	3423	46944	411.0	14.5	12.0%
Waterton Mann.	3207694	34000	144254	1529.0	54.0	4.5%
Fernie/Elk V. Meso.	214745	203	214745	203.0	7.2	100.0%

---

[1] The resource evaluation area includes the entire Elk, Bull, Wigwam and Flathead River watersheds and is larger than the SRMMP area. See Section B.1.1 for explanation.

Fernie/Elk V. Paleo.	186637	5142	186637	5142.0	181.6	100.0%
Rocky Mtn Trench	504985	849	131451	221.0	7.8	26.0%
B. Purcell immature	1985100	622	59681	18.7	0.7	3.0%
Total				**38116.0**	**1346.1**	

OIL	ha	106m3	ha	106m3	MMBO	%
Kishenehn oil	104589	78	13811	10.3	64.8	17.0%
Waterton Mann. oil	3207694	60.7	184958	3.5	22.0	4.5%
B. Purcell immature	1985100	4.5	61759	0.14	0.9	3.0%
Total				**13.94**	**87.7**	

Based on this table the SRMMP resource evaluation area has estimated potential oil resources of 88 MMBO and potential gas 1.3 TCF. Based on a $3/mcf and $28/bbl price the estimated value of the resource is $240 million for oil and $550 million for gas. (Assuming 50% of the resource is discovered and 20% of the oil and 85% of the gas are recovered). These numbers represent a potential value of the resource only. They are provided as a term of reference and do not include any land sale bonuses, rentals, economic spinoffs or other revenues that may accrue locally or provincially.

Coalbed Methane

The resource evaluation area contains the Elk Valley, Crowsnest and Flathead coalfields. The total resource in the three coalfields is estimated to be in excess of 50 billion tonnes of coal, and large areas underlain by coal have coalbed methane (CBM) potential.

Note, however, that most of these coal resources are outside the plan area. This is because almost all of the Elk Valley coalfield and the majority of the Crowsnest coalfield are not in the SRMMP area. All of the Flathead coalfield is within the SRMMP area, and only its coalbed methane potential is considered here.

Coal in the Flathead coalfield occurs in a number of outliers of the Mist Mountain Formation, the largest of which is the so-called Sage Creek Coal deposit on Cabin Creek. Geological studies estimate that the Flathead River valley may overlay some 4 billion tonnes of near-surface coal and up to 13 billion tonnes of deeply buried coal. The coal resource available for CBM exploration is about 1 billion tonnes with a potential CBM resource of 0.4 trillion cubic feet, or 11 billion cubic metres.

SOUTHERN ROCKY MOUNTAIN MANAGEMENT PLAN

APPENDIX 23.0

OLD GROWTH AND MATURE SERAL DEPLOYMENT SUMMARIES

LU	BEO	BEC	FC INVENTORY CFLB HA	OLD GROWTH AGE	MIN. OLD GROWTH TARGET %	MINIMUM OLD GROWTH CFLB TARGET HA	TOTAL CFLB OGMAs DELINEATED HA	ADDITIONAL NON CFLB OGMAs DELINEATED HA	FC INVENTORY OLD CFLB NC HA	FC INVENTORY OLD THLB HA	FC INVENTORY TOTAL CFLB OLD HA	OGMAs DELINEATED IN FC INVENTORY CFLB OLD NC	OGMAs DELINEATED IN FC INVENTORY CFLB NC	OGMAs DELINEATED IN FC INVENTORY OLD THLB	OGMAs DELINEATED IN FC INVENTORY THLB	*LUPG Direction - Amount of THLB that Could be in OGMA's*	COMMENTS	Mature only target percent %	Mature only target (ha)	Mature seral spatial deployment (ha)
C14	H	MSdk	6802	>140	21	**1428**	**1416**	265	146	147	293	145	674	141	742	*1282*		18%	1,224	1125
	H	ESSFdk	11996	>140	21	**2519**	**2534**	10	1897	897	2794	1746	1889	564	645	*622*	Surplus old CFLB NC is Pl leading stands	13%	1,559	1674
	H	ESSFdku	673	>140	21	**141**	**144**	4	230	2	232	127	143	1	1	*0*			**2,784**	**2799**
						4089	**4094**													
C15	H	IDFdm2	92	>250	19	**17**	**9**	0	0	0	0	0	6	0	3	*17*				
	H	MSdk	5213	>140	21	**1095**	**1095**	152	780	608	1388	709	777	302	318	*315*		18%	938	942
	H	ICHmk1	3359	>140	21	**705**	**709**	65	533	236	769	519	545	164	164	*172*		13%	437	438
	I	ESSFdk	8403	>140	14	**1176**	**1184**	33	2960	741	3701	1021	1024	160	160	*0*	THLB component is primarily in Celestial Creek. Very important area for grizzly habitat, wallows, and connectivity. Area very important for guide-outfitter		**1,375**	**1380**
	I	ESSFdku	451	>140	14	**63**	**61**	0	341	2	343	59	59	2	2	*0*				
	I	ESSFwm	2697	>250	9	**243**	**249**	7	26	0	26	0	244	0	5	*217*				
	I	ESSFwmu	727	>250	9	**65**	**62**	2	0	0	0	0	62	0	0	*65*				
						3365	**3369**													
C16	I	MSdk	12550	>140	14	**1757**	**1756**	1179	162	210	372	154	784	194	972	*1595*	OGMA designations will allow for required road crossing of the Flathead river, where economic/biological values warrant.			
	I	ESSFdk	20907	>140	14	**2927**	**2559**	126	3641	994	4635	2151	2278	250	281	*0*	Some THLB selected because of best old growth attributes, tailed frog habitat, a couple of key locations for connectivity as negotiated with FES (eg.Cabin Creek) and as per previous MoF/MoE agreements			
	I	ESSFdku	1019	>140	14	**143**	**507**	57	705	54	759	502	502	5	5	*0*				
						4827	**4822**													
C17	I	MSdk	1124	>140	14	**157**	**165**	65	85	159	244	58	101	52	64	*72*				
	I	ESSFdk	10885	>140	14	**1524**	**1176**	247	1094	753	1847	960	1086	90	90	*430*				
	I	ESSFdku	1933	>140	14	**271**	**654**	[illegible]	623	84	707	591	653	1	1	*0*				

LU	BEO	BEC	FC INVENTORY CFLB HA	OLD GROWTH AGE	MIN. OLD GROWTH TARGET %	MINIMUM OLD GROWTH CFLB TARGET HA	TOTAL CFLB OGMAs DELINEATED HA	ADDITIONAL NON CFLB OGMAs DELINEATED HA	FC INVENTORY OLD CFLB NC HA	FC INVENTORY OLD THLB HA	FC INVENTORY TOTAL CFLB OLD HA	OGMAs DELINEATED IN FC INVENTORY CFLB OLD NC	OGMAs DELINEATED IN FC INVENTORY CFLB NC	OGMAs DELINEATED IN FC INVENTORY OLD THLB	OGMAs DELINEATED IN FC INVENTORY THLB	*LUPG Direction - Amount of THLB that Could be in OGMA's*	COMMENTS	Mature only target percent %	Mature only target (ha)	Mature seral spatial deployment (ha)
						1952	**1995**													
C18	I	MSdk	20442	>140	14	**2862**	**2857**	593	673	1188	1861	396	971	746	1886	*2189*	Surplus old CFLB NC = Capturing of riparian habitats. Other old stands with not good attributes	12%	2,453	2478
	I	ESSFdk	19597	>140	14	**2744**	**2751**	42	6633	1306	7939	2596	2657	86	94	*0*	Surplus old CFLB NC = Capturing of riparian			
	I	ESSFdku	1291	>140	14	**181**	**178**	3	1019	0	1019	178	178	0	0	*0*				
						5786	**5786**													
C23	H	MSdk	12264	>140	14	**1717**	**1537**	55	552	683	1235	374	672	422	865	*1165*				
						2652	**2820**													
	H	ESSFdk	12630	>140	21			43	3821	406	4227	2671	2820	0	0	*0*	Young OGMA (recruitment) is part of larger patch which is an economically marginal area	13%	1,642	1656
	H	ESSFdku	2729	>140	21	**573**	**602**	18	1950	10	1960	571	599	3	3	*0*				
						4942	**4959**													
C24	H	MSdk	1438	>140	21	**302**	**301**	18	89	0	89	89	301	0	0	*213*				
	H	ESSFdk	608	>140	21	**128**	**129**	16	46	0	46	29	129	0	0	*82*				
	H	ESSFdku	199	>140	21	**42**	**43**	0	4	0	4	3	43	0	0	*38*				
	H	ESSFwm	2642	>250	13	**343**	**354**	22	75	0	75	42	354	0	0	*268*				
	H	ESSFwmu	794	>250	13	**103**	**113**	2	39	0	39	30	113	0	0	*64*				
	H	ICHmk1	9050	>140	21	**1901**	**1928**	82	207	52	259	135	1457	35	471	*1694*				
	H	IDFdm2	173	>250	19	**33**	**37**	0	0	0	0	0	31	0	6	*33*				
						2852	**2905**													
C25	I	MSdk	2001	>140	14	**280**	**284**	0	583	55	638	276	281	3	3	*0*				
	I	ESSFdk	1295	>140	14	**181**	**190**	0	460	68	528	187	190	0	0	*0*				
	I	ESSFdku	168	>140	14	**24**	**8**	0	37	3	40	8	8	0	0	*0*				
	I	ESSFwm	2628	>250	9	**237**	**238**	2	206	11	217	68	220	7	18	*31*				
	I	ESSFwmu	124	>250	9	**11**	**18**	0	3	0	3	0	18	0	0	*8*				
	I	ICHdm	3394	>250	14	**475**	**476**	3	157	23	180	136	362	23	114	*318*				
	I	IDFdm2	191	>250	13	**25**	**8**	0	0	0	0	0	8	0	0	*25*				
	I	IDFdm2a	296	>250	13	**38**	**58**	1	0	0	0	0	43	0	15	*38*				
						1271	**1280**													
C26	I	MSdk	2291	>140	14	**321**	**323**	2	42	105	147	42	111	103	212	*279*				
	I	ESSFdk	3970	>140	14	**556**	**567**	2	545	66	611	504	567	0	0	*11*				
	I	ESSFdku	590	>140	14	**83**	**92**	1	122	5	127	89	91	0	1	*0*				

LU	BEO	BEC	FC INVENTORY CFLB HA	OLD GROWTH AGE	MIN OLD GROWTH TARGET %	MINIMUM OLD GROWTH CFLB TARGET HA	TOTAL CFLB OGMAs DELINEATED HA	ADDITIONAL NON CFLB OGMAs DELINEATED HA	FC INVENTORY OLD CFLB NC HA	FC INVENTORY OLD THLB HA	FC INVENTORY TOTAL CFLB OLD HA	OGMAs DELINEATED IN FC INVENTORY CFLB OLD NC	OGMAs DELINEATED IN FC INVENTORY CFLB NC	OGMAs DELINEATED IN FC INVENTORY OLD THLB	OGMAs DELINEATED IN FC INVENTORY THLB	*LUPG Direction - Amount of THLB that Could be in OGMA's*	COMMENTS	Mature only target percent %	Mature only target (ha)	Mature seral spatial deployment (ha)
						413	**416**				100					*313*	THLB area is recruitment			
	I	ESSFwm	4592	>250	9			3	100	0		25	355	0	61					
	I	ESSFwmu	418	>250	9	**38**	**31**	0	25	0	25	26	31	0	0	*13*				
	I	ICHmk1	10837	>140	14	**1517**	**1518**	25	641	143	784	641	1060	143	458	*876*				
	I	IDFdm2	128	>250	13	**17**	**24**	1	0	0	0	0	22	0	2	*17*				
						2944	**2971**													
C27	I	MSdk	8774	>140	14	**1228**	**1214**	6	184	94	278	167	738	93	476	*1044*				
	I	ESSFdk	15507	>140	14	**2171**	**2239**	4	2455	998	3453	1460	2058	153	181	*0*	THLB component is in scattered small areas of expanded riparian habitat, rare old growth stands, and economically marginal timber in difficult locations.			
	I	ESSFdku	1903	>140	14	**266**	**278**	0	934	259	1193	216	273	5	5	*0*				
						3666	**3731**													
															8324	*13507*				
					TOTAL	**35694**	**35912**													

SOUTHERN ROCKY MOUNTAIN MANAGEMENT PLAN

APPENDIX 24.0

ADDITIONAL BACKGROUND SUPPORT DOCUMENTATION

Effect of Motorized Recreation on Grizzly Bears and Rocky Mountain Ungulates : An Annotated Bibliography

Listed Vertebrate and Vascular Plant Species Occurring in the Cranbrook Forest District and in the Southern Rocky Mountain Management Plan Area

Wildlife Tree Retention Methodology

General Wildlife Conservation Considerations

Guide Outfitting In the East Kootenay

Riparian

Ungulates of Special Significance in the Plan Area

Wide-Ranging Carnivores

Access and Wildlife Conservation

Definitions

June 25, 2002

Effects of Motorized Recreation on Grizzly Bears and Rocky Mountain Ungulates

An Annotated Bibliography

Submitted to:
Southern Rocky Mountain Management Plan Project Team,
Ministry of Sustainable Resource Management
Cranbrook, B.C.

Prepared by:
Sue Cairns, Consultant
525 11th Street South,
Cranbrook, B.C.

Purpose

This Annotated Bibliography summarizes the effects of motorized recreation on grizzly bears and Rocky Mountain ungulates based on seventeen reports provided by the Ministry of Sustainable Resource Management. The Summary attached as appendix 1, is a brief overview of the definitive effect statements in the Annotated Bibliography. The Summary statements are cross referenced with the Annotated Bibliography using reference # and author.

The quotations extracted from the literature describe the effects associated mainly with the following types of disturbance:

- snowmobile use impacts on wintering ungulates;
- helicopter use impacts on mountain goats and bighorn sheep;
- the impacts of road density, traffic, access, and spring snowmobile use on grizzly bears.

Note that for the Reference columns of the Annotated Bibliography, the first citation in each block is the document which was reviewed. The additional citations in that block listed below the 'parent' document are citations occurring within the text of the parent document.

Documented Impacts

Many statements in the Annotated Bibliography are taken from Greater Yellowstone Area reporting on winter recreation effects on wildlife (Olliff et al. 1999)*. For Yellowstone National Park, Dr. Caslick considers the balance between visitor use and resource conservation, and provides conclusions and recommendations which point to the importance of controlling recreation in or near winter ranges. Dr. Caslick states:

> "…in regard to wildlife in Yellowstone, the most pressing Visitor Use Management issue is snowmobiling … in or near thermally-affected wildlife habitats that are known to be unique and of critical value to wildlife in winter. …there is now ample documentation to administratively close these thermally-influenced winter habitats, prohibiting winter use by private and commercial snow machines, skiers, snowshoers, and hikers (page A-10)".

Dr. Caslick developed two summaries of published research which support the above statement. The summaries: the Matrix of Winter Recreation Effects on Wildlife (24 pp), and Selected Literature Citations from Bennett, 1995, and New Citations from Caslick on Winter Recreation Effects on Wildlife (74 pp) are included in Olliff et al. 1999, Appendix 1.

Olliff, T., K. Legg, and B. Kaeding, editors. 1999. Effects of winter recreation on wildlife of the Greater Yellowstone Area: a literature review and assessment. Report to the Greater Yellowstone Coordinating Committee. Yellowstone National Park, Wyoming. 315 pp

In this Annotated Bibliography, established impacts that are cited repeatedly in the reviewed literature include the following:

- **Animals depend on minimizing energy expenditure during the winter period, so any disturbance resulting in energetically demanding flight, habitat displacement, or physiological stress responses have negative long term survival and reproduction implications** (Gates and Hudson 1979, Geist 1978, Marchand 1996, Thorne 1976, Geist 1982, B.C. Wildlife Branch 2001). Nelson and Leege (1982) demonstrated in experimental feeding trials mimicking elk winter diets, that up to 87% of the daily forage consumed by elk in winter is used for standard metabolic function. Thus less than 15% is left for growth, reproduction, temperature regulation, and activity. The importance of energy conservation by ungulates in winter is clearly established.

- **Disturbances that are most detrimental to wildlife are those that are unanticipated** (Aasheim 1980, Parker et al 1984). Disturbances which are predictable and localized, and without negative associations, may be tolerated over time (Penner 1988, Singer and Doherty 1985). **However, unpredictable activities exact high costs and include in particular, helicopter overflights, and over-land uses which are not confined to established trails** (Segerstrom 1982, Stemp 1983, Penner 1988, Ward 1973, Olliff 1999, Busnel 1978, Geist 1971, Pedevillano and Wright 1987, Cote 1996, Idaho Dept of Fish and Game 1990, McArthur et al 1979, Calef et al 1976, Joslin 1986, Harrington and Veitch 1991).

- Parker et al (1984) and Freddy et al (1986) observed that **greater flight distances occur in response to skiers or individuals on foot than to snowmobiles**. However, since snowmobiles can cover much greater distances in the course of a day, encountering many more animals, the effects of snowmobile use are considered to be significantly more far reaching.

- **Grizzly bear use of suitable habitat declines as road density and road traffic increase** (Mace et al).

- **Vehicular traffic along open roads can displace grizzly bears from 100-900m** (Aune and Kasworm 1989, Kasworm and Manley 1990, Matson et al 1987, McLellan 1990, McLellan and Shackleton 1988).

- **As road access into grizzly bear habitat increases, bear mortalities increase. This results from legal and illegal hunting, and removal and kills of habituated bears** (McLellan 1990, Tietje and Ruff 1983, Brannon 1988, McLellan and Mace 1985, Noss 1995). "Of the collared grizzly bear mortalities reported in the literature for six study areas in Alberta, B.C., Montana and Idaho, 68% of known mortalities were the result of illegal kills and hunting (McLellan 1990)."

Reference			Species	Activity	Effect	Conclusion
#	Author	Report				
1	Beckett, J.	Making Tracks - Motorized Use in the Backcountry. A Fact Sheet from Canadian Parks and Wilderness Society. Funded by Forest Renewal BC: Terrestrial Ecosystem Restoration Program. 2002. Page 1, 2.	Bighorn sheep	Helicopters	• Bighorn sheep respond dramatically to helicopter disturbance and may abandon important winter feeding grounds in an effort to flee the aircraft (Bleich, 1994). • Helicopters flying at 400m above ground have produced elevated heart rates that may last up to one hour (Stemp, 1983). This can have a greater impact in the spring when females may have young with them.	Helicopter use impacts on bighorn sheep may include displacement from important winter feeding grounds, and elevated heart rates lasting up to one hour.
	Bleich, V.C., R.T. Bowyer, A.M. Pauli, M.C. Nicholson and R.W. Anthes	Mountain sheep Ovis canadensis and helicopter surveys: ramifications for the conservation of large mammals. Biological Conservations 70:1-7. 1994				
	Stemp, R.E.	Heart rate responses of bighorn sheep to environmental factors and harassment. M.Sc. thesis, Univ. of Calgary, AB. 1983.				

Reference			Species	Activity	Effect	Conclusion
#	Author	Report				
2	Beckett, J.	Making Tracks - Motorized Use in the Backcountry. A Fact Sheet from Canadian Parks and Wilderness Society. Funded by Forest Renewal BC: Terrestrial Ecosystem Restoration Program. 2002. Page 2.	Grizzly bears, ungulates and other wildlife species	Snowmobile and ATV	Pollution and climate change: • Two-stroke engines discharge roughly one third of their fuel unburned, directly into the environment (U.S. EPA, 1991). • Pollutants then travel through the ecosystem by seeping into the soil and end up in streams and lakes. • One hour of two-stroke engine use emits as much hydrocarbon pollution as driving a modern car for one year (California Air Resources Board, 1999). • Climate change is identified as a significant stress in parks and protected areas according to a recent Parks Canada report (Scott and Suffling, 2000).	Snowmobile and ATV use effect wildlife habitat through the substantial contribution they make to pollution and climate change. The two-stroke engine discharges roughly one third of its fuel unburned directly into the environment; and one hour of two-stroke engine use emits as much hydrocarbon pollution as driving a modern car for one year.
	U.S. EPA. 1991	Non-road engine and vehicle emission study-report. EPA 21A-2001. US EPA, Office of Air and Radiation. Washington, D.C. 1991.				
	California Air Resources Board	www.arb.ca.gov. 1999.				
	Scott, D. and R. Suffling (editors)	Climate Change and Canada's National Park System. Environment Canada and Parks Canada.				

Annotated Bibliography on the Effects of Motorized Recreation on Grizzly Bears and Rocky Mountain Ungulates

Reference			Species	Activity	Effect	Conclusion
#	Author	Report				
	Canfield, Jodie; Jack Lyon; Michael Hillis and Michael Thompson	Effects of Recreation on Rocky Mountain Wildlife: A Review for Montana. 1999. Chapter 6, page 6.6.	Ungulate Winter Range	Human activity	• Gates and Hudson (1979), found that activity by elk in cold temperatures results in a thermoregulatory penalty, that is, it takes more energy to move in winter than in the fall. Thus, while inactivity provides an energetic advantage for animals exposed to cold, forced activity caused by human disturbance exacts an energetic disadvantage.	Human disturbance exacts an energetic disadvantage on wintering animals. Overt behavioural responses are highly variable, and range from an increase in general alertness to outright flight. Physiological responses include increased metabolism, which could result in illness, decreased reproduction and death.
	Gates, C.C. and R.J. Hudson	Effects of posture and activity on metabolic responses of wapiti to cold. Journal of Wildlife Management 43(2):564-567. 1979.			• Overt expression of energetic cost can take a number of forms, ranging from an increase in general alertness to a slow retreating movement to outright flight, depending on the ungulate species and the type of disturbance.	
	Geist, V.	Behaviour. Pages 283-296 in J.L. Schmidt and D.L. Gilbert, editors. Big game of North America: ecology and management. Stackpole Books, Harrisburg, P.A. 494pp. 1978.			• Geist (1978) defined effects of human disturbance in terms of increased metabolism, which could result in illness, decreased reproduction, and even death.	

Reference			Species	Activity	Effect	Conclusion
#	Author	Report				
2	Canfield, Jodie; Jack Lyon; Michael Hillis and Michael Thompson	Effects of Recreation on Rocky Mountain Wildlife: A Review for Montana. 1999. Chapter 6, page 6.6.	Bighorn sheep	Recreation	• Of the ungulate species for which relationships with humans and disturbance have been reported, the bighorn sheep appears to be most susceptible to detrimental effects. • Berwick (1968) suggested that harassment may be debilitating to winter stressed animals, and several other authors have agreed. Geist (1971) speculated that harassment by recreationists may be fatal to sheep, and Dunaway (1971) considered disturbance caused by human recreation to be a factor limiting populations of bighorn sheep in California. • Stemp (1983), who used observations as well as heart rate data to monitor response to harassment, reported that overt behaviour was a poor indicator of the stress response of bighorn sheep to human intruders.	Bighorn sheep are highly susceptible to human disturbance, however their overt behavioural response is a poor indicator of the stress incurred by disturbance. Disturbance caused by recreation is considered to be a factor limiting populations of bighorn sheep in California.
	Berwick, S.H.	Observations on the decline of the Rock Creek, Montana, population of bighorn sheep. Thesis, University of Montana, Missoula, Montana. 245pp. 1968.				
	Geist, V.	Bighorn sheep ecology. Wildl. Soc. News 136:61. 1971.				
	Dunaway, D.J.	Human disturbance as a limiting factor of Sierra Nevada bighorn sheep. Transactions of the N.A. Wild Sheep Conf. 1:165-173. 1971.				
	Stemp, R.E.	Heart rate responses of bighorn sheep to environmental factors and harassment. Thesis, Univ. of Calgary, AB, Cda. 314pp+appendices. 1983.				

Annotated Bibliography on the Effects of Motorized Recreation on Grizzly Bears and Rocky Mountain Ungulates

Reference			Species	Activity	Effect	Conclusion
#	Author	Report				
3	Canfield, Jodie; Jack Lyon; Michael Hillis and Michael Thompson	Effects of Recreation on Rocky Mountain Wildlife: A Review for Montana. 1999. Chapter 6, page 6.7.	Ungulate Winter Range	Snowmobile	• Mahler (1967) complained that snow machines were illegally used for hunting. • Neuman and Merriam (1972) reported the loss of insulating quality in snow packed by snowmobiles as well as damage to vegetation. Fancy and White (1985) found that the energy cost for caribou of cratering through snow compacted by a snowmobile was 2-4 times as great as for uncrusted snow. • Huff and Savage (1972) reported that the size of home ranges for whitetails was reduced in high use areas, and snowmobile use appeared to force deer into less preferred habitats. • Aasheim (1980) observed that animals accustomed to humans are less affected by snowmobiles than animals in more remote areas.	Effects of snowmobile activity on wintering ungulates include: reduced forage availability as the result of snow compaction; reduced home range size; and displacement to less preferred habitats.
	Malaher, G.W.	Improper use of snow vehicles for hunting. Transactions of the N.A. Wildl. and Natural Resources Conference 32:429-433. 1967.				
	Neuman, P.W. and H.G. Merriam	Ecological effects of snowmobiles. The Cdn Field-Naturalist 86:207-12. 1972.				
	Fancy, S.G. and R.G. White	Energy expenditures by caribou while cratering in snow. Journal of Wildl. Manage.49(4):987-993. 1985.				
	Huff, D.E. and P.J. Savage	A correlation of deer movements with snowmobile activity in Minnesota during winter. Proc. of the Midwest Fish and Wildl. Conf. 34:42-49. 1972.				
	Aasheim, R.	Snowmobile impacts on the natural resource environment. Pages 191-200 in R.N.L. Andrews and P.F. Nowak, ed. Off-road vehicle use: a management challenge. U.S. Dept. of Agric., Office of Environ. Quality. Washington, D.C. 1980.				

Annotated Bibliography on the Effects of Motorized Recreation on Grizzly Bears and Rocky Mountain Ungulates

Reference			Species	Activity	Effect	Conclusion
#	Author	Report				
4	Canfield, Jodie; Jack Lyon; Michael Hillis and Michael Thompson Parker, K.L, C.T Robbins, T.A. Hanley Segerstrom, T. Stemp, R.E.	Effects of Recreation on Rocky Mountain Wildlife: A Review for Montana. 1999. Chapter 6, page 6.6. Energy expenditures for locomotion by mule deer and elk. Journ. of Wildl. Manage. 48(2) 474-488. 1984. Effects of an operational coal strip mine on pronghorn antelope. Pages 174-208 in J.V McKenzie, chair. Proc. of the tenth pronghorn antelope conference. 1982. Heart rate responses of bighorn sheep to environmental factors and harassment. Thesis, Univ. of Calg., AB. 314pp+ appendices. 1983.	Ungulate Winter Range	Winter recreation	• Parker et al (1984) observed, "Flight distances decline from early to late winter as the animals become habituated and as body energy reserves are depleted. Greater flight distances occur in response to skiers or individuals on foot than to snowmobiles, suggesting that the most detrimental disturbances to wintering animals is that which is unanticipated." • This greater response to unpredictable or erratic disturbance was also noted for pronghorn (Segerstrom 1982) and bighorn sheep (Stemp 1983).	Observations indicate that the most detrimental disturbances to wintering animals are those that are unanticipated.

Reference			Species	Activity	Effect	Conclusion
#	Author	Report				
5	Canfield, Jodie; Jack Lyon; Michael Hillis and Michael Thompson	Effects of Recreation on Rocky Mountain Wildlife: A Review for Montana. 1999. Chapter 6, page 6.7.	Mtn Goat, Bighorn Sheep	Helicopter	• Bleich et al. (1994) recorded negative responses of bighorn sheep to helicopter over flights. • Joslin (1986b) reported a decline in mountain goat reproduction and/or recruitment of kids in response to disturbance by helicopters in Montana. • Cote (1996) reported that mountain goats were disturbed by 85% of all flights within 500m. • Luz and Smith (1976) found that pronghorn responses to helicopters varied from mild to strong in relation to decibel levels.	Bighorn sheep and mountain goats respond negatively to helicopter over flights; for mountain goats a decline in reproduction rate is reported.
	Bleich, V.C., R.T. Bowyer, A.W. Pauli, M.C. Nicholson, and R.W. Anthes	Mountain Sheep and Helicopter Surveys: ramifications for the conservation of large mammals. Biol. Cons. 70(1): 1-7. 1994				
	Joslin, G.	Mountain goat population changes in relation to energy exploration along Montana's Rocky Mountain Front. Pages 253-271 in Proceedings of the Fifth Northern Wild Sheep and Goat Council. 1986.				
	Cote, S.D.	Mountain goat responses to helicopter disturbance. Wildl. Soc. Bull. 24(4): 681-685. 1996.				
6	Canfield, Jodie; Jack Lyon; Michael Hillis and Michael Thompson	Effects of Recreation on Rocky Mountain Wildlife: A Review for Montana. 1999. Chapter 6, page 6.7, 6.8.	Ungulate Winter Range	Snowmobile and helicopter	The degree of disturbance caused by skiers, snowmobiles, and helicopters has mostly been reported in terms of flight response, or in some other observed change in animal behaviour. Based on elk heart rate data, Chabot (1991) showed that even when disturbances do not induce an overt behavioural response, the increased heart rates can result in relatively high energy expenditures. These results have been confirmed and expanded for a variety of ungulates including mule deer, white tailed deer, elk, bighorn sheep and other ungulates.	Relatively high energy expenditure can result from human disturbance which does not elicit an overt behavioural response, but rather is only expressed through heart rate response. These results are confirmed and expanded for virtually every ungulate species.
	Chabot, D.	The use of heart rate telemetry in assessing the metabolic cost of disturbances. Transactions of the N.A. Wildlife and Natural Resources Conf 56:256-263. 1991.				

Annotated Bibliography on the Effects of Motorized Recreation on Grizzly Bears and Rocky Mountain Ungulates

Reference			Species	Activity	Effect	Conclusion
#	Author	Report				
7	Canfield, Jodie; Jack Lyon; Michael Hillis and Michael Thompson	Effects of Recreation on Rocky Mountain Wildlife: A Review for Montana. 1999. Chapter 6, page 6.2.	Ungulate Winter Range	Winter recreation	Impacts of human disturbance to wintering animals include: • increased energy costs at a time when it is critical for the animals to minimize energy expenditure; • possible displacement to less desirable habitats; • possible tolerance of urban developments. Tendencies to habituation vary by species, but habituated ungulates are almost always undesirable.	Winter recreation impacts to ungulates include increased energy expenditure; habitat displacement; and potential habituation.
1	Cote, S.D McArthur, R.A., R.H. Johnston and V.Geist Calef, G.W., E.A. DeBock and G.M. Lortie Joslin, G. Harrington, F.H. and A.M. Veitch	Mountain goat response to helicopter disturbance. Wildl. Soc. Bull 24(4): 681-685. 1996. Page 684. Factors influencing heart rate in free-ranging bighorn sheep: a physiological approach to the study of wildlife harassment. Can. J. Zool. 57:2010-2021. 1979. The reaction of barren ground caribou to aircraft. Arctic 29:201-212. 1976. Mountain goat population changes in relation to energy exploration along Montana's Rocky Mountain Front. Proc. Bienn. Symp. North. Wild Sheep and Goat Counc. 5: 253-269. 1986. Short term impacts of low-level jet fighter training on caribou in Labrador. Arctic 44: 318-327. 1991.	Mtn Goat	Helicopter	• Reaction to helicopters can increase energy expenditure, reduce fat accumulation, or change animal physiological condition (McArthur et al 1979), factors that may affect survival or reproduction (Calef et al. 1976, Joslin 1986, Harrington and Veitch 1991). • Prolonged helicopter disturbance could have severe consequences on daily energy intake of goats, especially for kids and nursing females.	Impacts of helicopter over flights on mountain goats may include: increased energy expenditure; reduced fat accumulation; and changed physiological condition. These factors affect overall reproduction and survival.

Annotated Bibliography on the Effects of Motorized Recreation on Grizzly Bears and Rocky Mountain Ungulates

Reference			Species	Activity	Effect	Conclusion
#	Author	Report				
2	Cote, S.D.	Mountain goat response to helicopter disturbance. Wildl. Soc. Bull 24(4): 681-685. 1996. Page 684.	Mtn Goat	Helicopter	• In the Alberta Caw Ridge study, the distance between the mountain goat groups and the helicopter was the most important factor affecting their behaviour. Goats appeared to be more sensitive to helicopter traffic than other open terrain ungulates; 37% of flights at > 1500m caused at least a moderate reaction. • Foster and Rahs (1983) found mountain goats were affected by flights within 1 km, the recommended flight distance from caribou and muskox, and responded beyond the disturbance distance threshold of 250-450 m observed for desert bighorn sheep (Stockwell et al 1991). • Observed goat herd splintering supports this conclusion.	Goats reacted to flights which were greater than 1.5 km in distance, indicating a higher sensitivity to helicopter traffic than other open terrain ungulates.
	Foster, B.R. and E.Y. Rahs	Mountain goat response to hydroelectric exploration in Northwestern British Columbia. Environ. Manage. 7:189-197. 1983.				
	Stockwell, C.A., G.C. Bateman and J. Berger	Conflicts in National Parks: a case study of helicopters and bighorn sheep time budgets at the Grand Canyon. Biol. Conserv. 56: 317-328. 1991				
1	Graham, P.J.	Snowmobile Grant Program. Montana Department of Fish, Wildlife and Parks. Final Programmatic Environmental Impact Statement. 1993. Page 84.	Ungulate Winter Range	Snowmobile	Physiological and overt behavioural responses: • Moen et al (1982) reported increased heart rate from 2.5 to 2.9 times in white-tailed deer, depending on the directed course of the snowmobile. They found no evidence of habituation to the disturbance, either in magnitude of the heart rate response or to the time for a return to normal. • Parker et al (1984) pointed out the additional drain on wintering mule deer or elk by artificially induced locomotion, a drain which could be important to their survival on poor winter range. • Ward and Cupal (1980) reported that based on heart rate, security cover was very important in dictating the distances of effective response by elk to human disturbance. Proximity to cover should be an important consideration in laying out snowmobile routes.	Effects of snowmobile disturbance on wintering ungulates include: • increased heart rate; and • flight response representing energy expenditure with potential survival impacts, depending on winter range quality. Effects appear to be directly related to availability of security cover.
	Moen, A., S. Whittemore, B.Buxton	Effects of disturbance by snowmobiles on heart rate of captive white-tailed deer. NY Fish & Game Journal. 1982.				
	Parker, K.L., C.T. Robbins and T.A. Hanley	Energy expenditures for locomotion by mule deer and elk. 1984.				
	Ward, L.A and J.C Cupal	Telemetered heart rate of three elk as affected by activity and human disturbance, Rocky Mount. For. Range Exp. Sta. 1980.				

Annotated Bibliography on the Effects of Motorized Recreation on Grizzly Bears and Rocky Mountain Ungulates

Reference			Species	Activity	Effect	Conclusion
#	Author	Report				
	Graham, P.J.	Snowmobile Grant Program. Montana Department of Fish, Wildlife and Parks. Final Programmatic Environmental Impact Statement. 1993. Page 85.	Grizzly Bear	Snowmobile	Recent studies of radio-collared grizzlies have shown that females and females with cubs were generally found in high elevation habitats covered by snow from mid-October through mid-May. During post-denning periods, females with cubs are less mobile than other bears and remain near the den site from early April through mid-May. Thus high elevation snowmobiling during mid to late-spring could increase the potential for encounters with post-denning bears (Mace and Manley, Pers. Commun.).	Grizzly bears are most susceptible to snowmobile disturbance in mid to late spring when females with cubs emerge from dens and have limited mobility.
	Jamieson, Bob.	Tools for Achieving Compliance with Recreation Management Regulations in B.C. 2002. Page 18.	Grizzly Bear	Open roads – traffic and road density	General consensus in the wildlife literature is that road density and road use have a major impact on habitat availability and therefore long term population status for grizzly bears. Note that it is the human use of the road (not the road itself), that is an issue for bears.	Road density and use have a major impact on habitat availability and therefore long-term population status for grizzly bears.
	Jamieson, Bob.	Tools for Achieving Compliance with Recreation Management Regulations in B.C. 2002. Page 18.	Ungulate Winter Range	Winter recreation	Heavy recreational use can affect both habitat availability for wintering ungulates, and can result in stress in individual animals as measured by stress hormone levels.	Heavy recreational use can affect both habitat availability for wintering ungulates, and can result in stress in individual animals as measured by stress hormone levels.
	Jamieson, Bob	Tools for Achieving Compliance with Recreation Management Regulations in B.C. 2002. Page 18.	Ungulate Winter Range	Snowmobile	Snowmobile use is a major issue in relation to wintering moose and caribou in B.C. since they winter in the deeper snow areas where most winter recreation occurs.	Moose and caribou are particularly susceptible to snowmobile use since they winter in deeper snow areas.
	Jamieson, Bob	Tools for Achieving Compliance with Recreation Management Regulations in B.C. 2002. Page 18.	Ungulate Winter Range	Snowmobile	Anecdotal evidence indicates that predation by wolf and cougar have a major impact on mountain goat populations, and these predators may be accessing high elevation wintering areas via roads and snowmobile tracks (T. Kinley, pers. comm.)	Mountain goat predation pressure in winter ranges is observed to be increasing as the result of wolf use of snowmobile tracks and roads.

Annotated Bibliography on the Effects of Motorized Recreation on Grizzly Bears and Rocky Mountain Ungulates

Reference			Species	Activity	Effect	Conclusion
#	**Author**	**Report**				
1	Knight, R.L. and K.J. Gutzwiller	Wildlife and Recreationists: Coexistence through Management and Research	Wildlife species generally	Human-made noise	• Wild animals can abandon favored habitat in response to disturbances or incur energetic expenses after reacting repeatedly when they cannot escape (p 116). • Aversive levels of noise might cause wild animals to become irritable, affecting feed intake, social interactions, or parenting. All these effects might eventually result in population declines (p 116). • If a noisy sound source arouses an animal, it has the potential to affect its metabolic rage by making it more active. Increased activity can, in turn, deplete energetic reserves (p 123).	Human made noise can cause the following responses in wild animals: 1.) preferred habitat abandonment; 2.) increased activity and depletion of energetic reserves; 3.) irritation, reduced feeding, altered social interactions or parenting. These effects have the potential to cause population declines.

Reference			Species	Activity	Effect	Conclusion
#	Author	Report				
2	Knight, R.L. and K.J. Gutzwiller	Wildlife and Recreationists: Coexistence through Management and Research	Grizzly bears, ungulates and other wildlife species	Human-made noise	• Studies have documented increases in activity after aircraft approaches. The overt behavioural component of these responses was fairly mild, such as starting a few steps or walking away slowly from the site of the disturbance (Harrington and Veitch 1991, Murphy et al 1993). However individuals tracked remotely moved greater distances in the 24 hours after exposure, on the order of 1-2 km (p 124). • Large mammals alter their movements for periods of up to one to two days after exposure to noisy disturbances (Harrington and Veitch 1991; Malme et al 1984; Davis et al 1988; Gese et al 1989; Klein 1973; Miller and Gunn 1979). Sometimes this results in short term changes in habitat use (Krausman et al 1986) (p 132). • If noisy sources enter the habitat on a schedule (e.g. snowmobiles on weekends), deer, sheep and elk avoid areas when the noisy sources are present and return when they are not (Van Dyke et al. 1986; Dorrance et al 1975; Edge and Marcum 1985; Leslie and Douglas 1980). If exposure is brief or if mammals have good cover, differences in home-range size are not detectable (Eckstein et al 1979; Edge et al 1985) (p 132). • If mammals are exposed repeatedly to the same noisy stimulus without harassment, responses decline rapidly (Krausman et al 1986; Valkenburg and Davis 1985). On the other hand, harassment amplifies responses (King and Workman 1986) (p 132).	Noisy disturbance causes large mammals to alter their movements for up to two days following exposure. Short term changes to habitat use may result, however in the case that noisy disturbance is predictable and is not associated with harassment, ungulates in particular are capable of developing an adaptive, avoidance or habituation, behavioural response.
	Harrington, F.H. and A.M. Veitch	Short term impacts of low-level jet fighter training on caribou in Labrador. Arctic 44 (4): 318-327. 1991.				
	Murphy, S.M., R.G. White, B.A. Kugler, J.A. Kitchens, M.D. Smith &D.S. Barber	Behavioral effects of jet aircraft on caribou in Alaska. Proc, of the 6th International Congress on Noise as a Public Health Problem. Actes INRETS 34 (3):471-478. 1993.				
	Malme, C.I., P.R. Miles, C.W. Clark, Pl Tyack and J.E. Bird	Investigations of the potential effects of underwater noise from petroleum industry activies on migrating gray whale behaviour Phase II: January 1984 Migration. Report by Bolt Beranek and Newman Inc. for U.S. Departments of the Interior. Technical Report No. 5586. 245 pp. 1984.				
	Davis, R.W., T.M. Williams and F Awbrey	Sea otter oil spill avoidance study. OCS Study. Report by Sea World Research Institute, Hubbs Marine Research Center for U.S. Dep. Of Interior, Minerals Management Services, Pacific Outer Continental Shelf Region. Technical Report No. MMS 88-0051. 65pp. 1988.				
	Gese, E.M., O.J. Rongstad, and W.R. Mytton	Changes in coyote movements due to military activity. Journal of Wildlife Management 53(2): 334-339. 1989.				
	Klein, D.R.	Reactions of reindeer to obstructions and disturbances. Science 173: 393-398. 1983				

Reference			Species	Activity	Effect	Conclusion
#	Author	Report				
	Continued… Knight, R.L. and K.J. Gutzwiller Miller, F.L. and A. Gunn Krausman, F.R., B.D. Leopold, and D.L. Scarborough	Continued… Wildlife and Recreationists: Coexistence through Management and Research Responses of Peary caribou and muskoxen to turbo-helicopter harassment, Prince of Wales Island, NWT, 1976-1977. Canadian Wildlife Service Occasional Paper 40. 88pp. 1979. Desert mule deer response to aircraft. Wildl. Soc. Bull. 14 (1):68-70. 1986.	Cont'd Grizzly bears, ungulates and other wildlife species	Continued… Human-made noise		
	Mace, Richard; John S. Waller; Timothy Manley; Jack Lyon; Hans Zuuring	Relationships among grizzly bears, roads and habitat in the Swan Mountains, Montana. Page 1402, 1403.	Grizzly Bear	Open roads-traffic, and road density	• Female grizzly bears occupied ranges having lower total road densities than unused areas. Female home range selection was high for sub alpine habitats that were unroaded and low for low temperate zone habitats with roads. • Selection was greatest for unroaded cover types, and declined as road densities increased. A total road density on multiple use lands of 6km/sq km differentiated the used from unused areas.	Grizzly bear use of suitable habitat in Montana declined as road density and road traffic increased.

Reference			Species	Activity	Effect	Conclusion
#	Author	Report				
	McLellan, Bruce and David Shackleton	Impact of roads on Grizzly Bears. Page 25, 26	Grizzly Bear	Open roads traffic, and adjacent cover	• Habitats within 250m of open road were used significantly less than habitats greater than 250m from roads. Use pattern represents a habitat loss equivalence of 58% in 0-100m distance from road; and 7% in the 101-250m distance from road. In the Flathead study area, this results in a total habitat loss equivalence of 8.7% (p25). • The amount of traffic on the road did not appear to influence bears' use of the habitat adjacent to it (p1). • The amount of cover offered adjacent to the road did not influence bear use of road side habitat (p1). • Flathead study population behaviours which are potentially reducing habitat loss impacts are: use of areas in close proximity to roads during hours of darkness; bear use of roads for travel; and age/sex class differences in bears that tend to use areas near roads (p25-26). In this case, the study population has somewhat adapted to the long standing presence of roads, however the adaptive behaviours do not compensate for habitat loss impacts resulting from road proximity avoidance (p25-26).	In the Flathead grizzly bear study area, open road represents total habitat loss of 8.7% due to decreased use of areas within 250m of the road (p25).
	McLellan, Bruce and David Shackleton	Impact of roads on Grizzly Bears, Page 29	Grizzly Bears	Open roads-traffic and adjacent cover	Behavioural response to road traffic: Bears immediate responses to vehicles indicates that when they are in open habitats they flee to cover, but when in cover, no reactions were detected. Weaned yearlings demonstrated the least response to vehicles (p2).	Roads in the Flathead study area, at their current density and levels of use, do cause behavioural changes in the bear population, but do not have a significant impact on the grizzly bear population density (p29).
	McLellan, B.N. and D.M. Shackleton	Impact of roads on Grizzly Bears. Page 30, 31	Grizzly Bear	Open roads direct human caused mortality	Access, and legal and illegal hunting: Roads in the Flathead study area have a very high potential of being a significant factor in future population declines due to the fact that most bears are killed from roads, and a slight increase in the number of adult female bears in the harvest will cause the population to decrease (p30, 31).	Once an area is roaded, its grizzly bear population is put in a precarious position and must be managed carefully (p31).

Annotated Bibliography on the Effects of Motorized Recreation on Grizzly Bears and Rocky Mountain Ungulates

Reference			Species	Activity	Effect	Conclusion
#	Author	Report				
	Noss, Reed	Ecological Effects of Roads. 1995. Page 12, 13.	Grizzly Bear	Open roads – traffic, and direct human caused mortality	Habituation response to road traffic: In any area where animals are exposed to frequent human activity, habituation can be expected which is not desirable because: some habituated animals will become aggressive toward humans resulting in their eventual demise (p12); and habituated animals are more vulnerable to legal and illegal shooting (p13).	Grizzly bear studies in Montana and B.C. have found that bears habituated to human activity, especially moving vehicles, are more vulnerable to legal and illegal shooting (p13).
	Noss, Reed Dood Knick & Kasworm	Ecological Effects of Roads. 1995. Page 17. No bibliography provided in the Noss report	Grizzly Bear	Open roads – direct human caused mortality	Access, and legal and illegal hunting: • Dood and coworkers found that 32% of all hunting mortality and 48% of all non-hunting mortality of grizzlies in Montana occurred within one mile of a road. • Knick and Kasworm recently found that illegal shooting was the primary cause of death for grizzlies in the Selkirk and Cabinet-Yaak ecosystems.	The majority of grizzly mortalities occur in close proximity to roads. Consequently, the ability of regions to maintain viable populations of grizzly bears is directly related to road density and human access (p17).

Reference			Species	Activity	Effect	Conclusion
#	Author	Report				
1	**Olliff, T., K. Legg, and B. Kaeding, editors.**	Effects of winter recreation on wildlife of the Greater Yellowstone Area: a literature review and assessment. Report to the Greater Yellowstone Coordinating Committee. Yellowstone National Park, Wyoming. 315 pages. 1999. Page 21	Ungulate Winter Range - Elk	Winter recreation	• Marchand (1996) reports that because of the low quality of winter forage, elk often rely on reducing energy expenditure to increase their chances of surviving and successfully reproducing • Nelson and Leege (1982) report that in experimental feeding trials most elk lost weight on diets that mimicked winter diets. Up to approx. 87% of the daily forage consumed by an elk in winter is used for standard metabolic function, leaving less than 15% for growth, reproduction, temperature regulation, and activity. • Thorne et al (1976) correlated high winter weight loss in pregnant females with prenatal calf loss, low calf birth weight, and low survival of newborns. • Adult males usually enter the winter in relatively poor condition and often injured as a result of rutting activity in the fall. Geist (1982) reports that quality of winter habitat alone may determine whether some males survive the winter.	Elk rely on fairly restricted winter ranges in which food and cover may be limited or of marginal quality, and consequently, any activity preventing them from using all or part of that range could reduce their ability to survive or to successfully reproduce (p21).
	Marchand, P.J.	Life in the cold: an introduction to winter ecology. Third edition. University Press of New England, Hanover, New Hampshire, USA. 1996.				
	Nelson, J.R. and T.A. Leege	Nutritional requirements and food habits. Pages 232-368 in J.W. Thomas and D.E. Toweill, editors. Elk of North America: ecology and management. Stackpole Books, Harrisburg, PA, USA. 1982.				
	Thorne, E.T., R.E. Dean, and W.G. Hepworth	Nutrition during gestation in relation to successful reproduction in elk. Journal of Wildlife Management 40: 330-335. 1976.				
	Geist, V.	Adaptive behavioural strategies. Pages 219-278 in J.W. Thomas and D.E. Toweill, editors. Elk of North America: ecology and management. Stackpole Books, Harrisburg, PA, USA. 1982.				

Reference			Species	Activity	Effect	Conclusion
#	Author	Report				
2	**Olliff, T., K. Legg, and B. Kaeding, editors.**	Effects of winter recreation on wildlife of the Greater Yellowstone Area: a literature review and assessment. Report to the Greater Yellowstone Coordinating Committee. Yellowstone National Park, Wyoming. 315 pages. 1999. Page 21.	Ungulate Winter Range - Elk	Snowmobile	• Anderson and Scherzinger (1975) reported that when recreational snowmobile activity increased in the Bridge Creek Game Management Area in northeastern Oregon, winter elk counts decreased by 50%. After the area was closed to snowmobiling, the population returned to its previous numbers. • Aune (1981) reported that snowmobile activity in Yellowstone Nat. Park occasionally inhibited free movement of wildlife, temporarily displacing them from certain areas. The most significant impact on wildlife distribution appeared to be within 60m of groomed snowmobile trails.	Temporary displacement of elk from winter range as the result of snowmobile activity is documented in northeastern Oregon and Yellowstone National Park.
	Anderson, E.W. and R.J. Scherzinger	Improving quality of forage for elk by cattle grazing. Journal of Range Management 28:120-125. 1975.				
	Aune, K.E.	Impacts of winter recreationists on wildlife in a portion of Yellowstone National Park, Wyoming. Thesis, Montana State University, Bozeman, Montana, USA. 1981.				

Reference			Species	Activity	Effect	Conclusion
#	Author	Report				
3	**Olliff, T., K. Legg, and B. Kaeding, editors.** **Ward, A.L.** **Aune, K.E.**	Effects of winter recreation on wildlife of the Greater Yellowstone Area: a literature review and assessment. Report to the Greater Yellowstone Coordinating Committee. Yellowstone National Park, Wyoming. 315 pages. 1999. Page 23. Elk behaviour in relation to multiple uses on the Medicine Bow National Forest. Proceedings of Western Association State Game and Fish Commission 53: 125-141. 1973. Impacts of winter recreationists on wildlife in a portion of Yellowstone National Park, Wyoming. Thesis, Montana State University, Bozeman, Montana, USA. 1981	Ungulate Winter Range - Elk	Snowmobile	• Ward (1973) reported that elk are easily conditioned to repeated patterns of human activity, but tend to be disturbed by deviations from normal patterns (p23). • In Yellowstone Nat. Park, Aune (1981) found that wildlife species, including elk, were more likely to be displaced by, or exhibit flight responses to snowmobile traffic during the pre-season than during the recreational season. This may have resulted from habituation by elk to the presence of snowmobile traffic and to establishment of a more constant traffic pattern during the recreational season. This change in response may also have resulted from decreasing physical condition of elk later in the winter, and increasing snow depth and crusting that inhibited flight (p23). • Elk also demonstrated a shift to a more crepuscular activity pattern when recreational snowmobile activity increased (Aune, 1981) (p23).	Elk are less likely to be displaced by or exhibit flight responses, when disturbance is predictable and limited to established trails.
4	**Olliff, T., K. Legg, and B. Kaeding, editors.**	Effects of winter recreation on wildlife of the Greater Yellowstone Area: a literature review and assessment. Report to the Greater Yellowstone Coordinating Committee. Yellowstone National Park, Wyoming. 315 pages. 1999. Page 25.	Ungulate Winter Range - Elk	Snowmobile	• Disturbance in areas where motorized activity is overland, is less predictable than on established motorized routes, and therefore has more potential to create flight response in individual elk or groups of elk. • Overland motorized use is likely to occur over a less confined area than transportation routes, potentially increasing the area of disturbance or displacement of elk. • This type of recreation usually occurs in higher elevation, deep snow areas and so may impact only scattered groups of adult males.	Overland motorized activity has more potential for causing elk flight response, since disturbance in these areas is unpredictable.

Reference			Species	Activity	Effect	Conclusion
#	Author	Report				
5	**Olliff, T., K. Legg, and B. Kaeding, editors.**	Effects of winter recreation on wildlife of the Greater Yellowstone Area: a literature review and assessment. Report to the Greater Yellowstone Coordinating Committee. Yellowstone National Park, Wyoming. 315 pages. 1999. Page 78.	Ungulate Winter Range - Moose	Human activity	• Flight behaviour of moose is unusual and often misinterpreted. Their reputation of being tolerant to humans may in part be because their stress response is more subtle than that of other ungulates. Shank (1979) reported a common response of moose to a disturbance was that they rarely reacted immediately and overtly to disturbing stimuli unless that stimulus was very intense. Often, they continued feeding and might even increase the intensity of feeding. While this is occurring, they moved without obvious sign of stress toward cover. Once cover was reached, they usually looked directly at the source of disturbance, often for the first time, and then ran. Until the moose bolts, stress may not be obvious because it is expressed in less noticeable physiological responses, such as increased breathing and elimination rates (p78).	Immediate response to disturbance by moose is physiological stress, which, because it is not physically obvious, has often been misinterpreted as a high degree of tolerance to human activity.
	Shank, C.C.	Human related behavioural disturbance to northern large mammals: a bibliography and review. Report prepared for Foothills Pipe Lines (South Yukon) Limited, Calgary, Alberta. 1979.				
6	**Olliff, T., K. Legg, and B. Kaeding, editors.**	Effects of winter recreation on wildlife of the Greater Yellowstone Area: a literature review and assessment. Report to the Greater Yellowstone Coordinating Committee. Yellowstone National Park, Wyoming. 315 pages. 1999. Page 77, 80, 81.	Ungulate Winter Range - Moose	Human activity	• Moose are negatively impacted if disturbance causes increased energy expenditure (p80). • Increased energy expenditure through flight and stress, are most likely when disturbance is unpredictable, is severe to sensory perception, and is in close proximity (p80, 81). • Moose are often in an environment where snow is deep, so flight response to disturbance is energetically costly (p80). • Geist (1971) stated that if visual and acoustical stimuli are predictable in space and time, the process of habituation by wildlife is enhanced (p77). • Busnel (1978) reported that panic responses may occur as a result of any kind of abrupt unexpected intrusion (p77).	The most severe impacts to wintering animals are the energetically costly flight and stress responses, resulting from unpredictable disturbance.
	Geist, V.	A behavioural approach to the management of wild ungulates. Pages 413-424 in E. Duffey and A.S. Watt, editors. The scientific management of animal and plant communities for conservation. Eleventh Symposium of the British Ecological Society. 1971.				
	Busnel, R.G.	Introduction in J.L Fletcher and R.G. Busnell, editors. Effects of noise on wildlife. Academic Press. NY, NY, USA. 1978.				

Reference			Species	Activity	Effect	Conclusion
#	**Author**	**Report**				
7	**Olliff, T., K. Legg, and B. Kaeding, editors.** **Rudd, L.T. and L.L. Irwin**	Effects of winter recreation on wildlife of the Greater Yellowstone Area: a literature review and assessment. Report to the Greater Yellowstone Coordinating Committee. Yellowstone National Park, Wyoming. 315 pages. 1999. Page 78, 81. Wintering moose vs oil/gas activity in western Wyoming. Alces 21:279-298. 1985.	Ungulate Winter Range - Moose	Snowmobile	• Rudd and Irwin (1985) reported that 50% of encounters between moose and snowmobiles resulted in displacement, while 94% resulted in some form of disturbance (p78). • Disturbance in areas where motorized activity is overland (not limited to established trails), is not predictable to moose. Routes, time of day, and numbers of people will be highly variable. As a result, there is a high probability of initiating a flight response and a low probability of habituation occurring. In addition, there is a chance snowmobilers will approach moose because snowmobile movements are unrestricted. This could be energetically very expensive for moose (p81).	Snowmobile activity causes displacement and disturbance responses in moose. The most severe impacts are in areas where overland motorized activity is permitted, since disturbance is these areas is unpredictable.
8	**Olliff, T., K. Legg, and B. Kaeding, editors.**	Effects of winter recreation on wildlife of the Greater Yellowstone Area: a literature review and assessment. Report to the Greater Yellowstone Coordinating Committee. Yellowstone National Park, Wyoming. 315 pages. 1999. Page 81.	Ungulate Winter Range - Moose	Roads and groomed trails	Moose are uniquely vulnerable to mortality by collisions with vehicles. This is because of the relationship between moose, browse availability, and snow conditions. Plowed roads and groomed trails in moose winter range offer moose relief from snow conditions as well as travel corridors to sources of browse. This, combined with their instinctive response of standing their ground in the face of a perceived threat help explain why this is such a serious problem in many areas (p81).	Moose tend to use plowed roads and groomed trails as travel routes, which combined with their delayed flight response, invites collisions with vehicles.

Reference			Species	Activity	Effect	Conclusion
#	Author	Report				
9	**Olliff, T., K. Legg, and B. Kaeding, editors.**	Effects of winter recreation on wildlife of the Greater Yellowstone Area: a literature review and assessment. Report to the Greater Yellowstone Coordinating Committee. Yellowstone National Park, Wyoming. 315 pages. 1999. Page 90.	Mtn Goat	Human activity	• Human disturbance can affect goat physiology, distribution, habitat use, fecundity, and ultimately, population health (Penner, 1988). • Decline in goat population levels occurred when development in or near goat habitats took place. The mechanisms causing population declines seem to be related to improved access for hunting or poaching (Chadwick, 1973; Foster, 1977; Hebert and Turnbull, 1977; Smith and Raedeke, 1982; Smith, 1984), abandonment of habitat due to alterations or disturbance (Chadwick, 1973; Hebert and Turnbull, 1977; Pendergast and Bindernagel, 1977), or continual stress as a result of human presence (Joslin, 1986). • Controlling human access has been continually suggested as the management tool that will have the greatest effects on the long-term health of goat populations (Chadwick, 1973, 1983; Eastman, 1977; Hebert and Turnbull, 1977; McFetridge, 1977; Wigal and Coggins, 1982; Joslin, 1986; Haynes, 1992). Joslin (1986) states, "Motorized access in or near mountain goat habitat is probably the single biggest threat to goat herds throughout North America."	Goat populations have declined in response to human disturbance. Population declines appear to be related to improved access for hunting and poaching, abandonment of habitat due to alteration or disturbance, or continual stress as the result of human presence. Of these mechanisms, motorized access is considered the biggest threat.
	Penner, D.F.	Behavioural response and habituation of mountain goats in relation to petroleum exploration at Pinto Creek, Alberta. Biennial Symposium of the Northern Wild Sheep and Goat Council 6:141-158. 1988.				
	Chadwick, D.H.	Mountain goat ecology-logging relationships in the Bunker Creek Drainage of Western Montana. Thesis, University of Montana, Missoula, Montana, USA. 1973.				
	Foster, B.R.	Historical patterns of mountain goat harvest in British Columbia. Pages 147-159 in W. Samuel and W.G. Macgregor, editors. Proceedings of First International Mountain Goat Symposium, Kalispell, Montana. British Columbia Ministry of Recreation and Conservation, Canada. 1977.				
	Hebert, D.H. and W.G. Turnbull,	A description of southern interior and coastal mountain goat ecotypes in B.C.. Pages 126-146 in W. Samuel and W.G. Macgregor, editors. Proceedings of First International Mountain Goat Symposium, Kalispell, Montana. British Columbia Ministry of Recreation and Conservation, Canada. 1977.				
				Continued...		

Reference			Species	Activity	Effect	Conclusion
#	Author	Report				
9	Olliff et al cont'd			human disturbance continued …		
	Smith, C.A. and K.J. Raedeke	Group size and movements of a dispersed, low density goat population with comments on inbreeding and human impact. Biennial Symposium of the Northern Wild Sheep and Goat Council 3: 54-67. 1982.				
	Smith, C.A.	Evaluation and management implications of long-term trends in coastal mountain goat populations in southeast Alaska. Biennial Symposium of the Northern Wild Sheep and Goat Council 4: 395-424. 1984.				
	Pendergast, B. and J. Bindernagel	The impact of exploration of coal on mountain goats in northeastern B.C.. Pages 64-68 in W. Samuel and W.G. Macgregor, editors. Proceedings of First International Mountain Goat Symposium, Kalispell, Montana. British Columbia Ministry of Recreation and Conservation, Canada. 1977.				
	Chadwick, D.H.	A beast the color of winter. Sierral Club Books, San Francisco, California, USA. 1983.				
	Eastman, D.S.	Research needs for mountain goat management. Pages 160-168 in W. Samuel and W.G. Macgregor, editors. Proceedings of First International Mountain Goat Symposium, Kalispell, Montana. British Columbia Ministry of Recreation and Conservation, Canada. 1977		Continued		

Reference			Species	Activity	Effect	Conclusion
#	Author	Report				
9	Olliff et al cont'd			human disturbance continued		
	McFetridge, R.J.	Strategy of resource use by mountain goat nursery groups. Pages 169-173 in W. Samuel and W.G. Macgregor, editors. Proceedings of First International Mountain Goat Symposium, Kalispell, Montana. British Columbia Ministry of Recreation and Conservation, Canada. 1977.				
	Wigal, R.A. and V.L. Coggins	Mountain goat. Pages 1008-1020 in J.A. Chapman and G.A. Feldhamer, editors. Wild mammals of North America: biology, management and economics. John Hopkins University Press, Baltimore, Maryland, USA. 1982.				
	Joslin, G.	Mountain goat population changes in relation to energy exploration along Montana's Rocky Mountain Front. Biennial Symposium of the Northern Wild Sheep and Goat Council 5: 253-271. 1986.				
	Haynes, L.A.	Mountain goat habitat of Wyoming's Beartooth Plateau: Implications for management. Biennial Symposium of the Northern Wild Sheep and Goat Council 8: 325-339. 1992				

Reference			Species	Activity	Effect	Conclusion
#	Author	Report				
10	**Olliff, T., K. Legg, and B. Kaeding, editors.**	Effects of winter recreation on wildlife of the Greater Yellowstone Area: a literature review and assessment. Report to the Greater Yellowstone Coordinating Committee. Yellowstone National Park, Wyoming. 315 pages. 1999. Page 91.	Mtn Goat	Winter Recreation	- Because of low productivity and narrow habitat requirements, goats can be considered a fragile wildlife resource, particularly while on winter ranges (Smith, 1982; Chadwick, 1983; Smith, 1984; Wigal and Coggins, 1988). - Because of the remote, rugged nature of goat wintering habitats, recreational use of such areas is unlikely. However, any use could potentially be detrimental. Abandonment of habitats or increased stress related to frequent encounters could be elicited through recreational activities including snowmobiling, skiing accessed by helicopter or from the ground, and ice climbing. - On the Sawtooth National Forest and Sawtooth National Recreation Area in Idaho, special management restrictions on winter recreation, including foot, snow machine and helicopter travel, have been established. Mitigation measures, including area restrictions, closures and other regulations, were enacted to minimize the potential for disturbances to wintering goat populations (Hamilton et al., 1996; USFS, 1997).	Goats are considered a fragile wilderness resource, and although recreational use of their remote, rugged wintering range is unlikely, any use could be detrimental due to potential habitat abandonment or increased stress in response to disturbance.
	Smith, K.G.	Winter studies of forest dwelling mountain goats of Pinto Creek, Alberta. Biennial Symposium of Wild Sheep and Goat Council 3:374-390. 1982.				
	Chadwick.D.H.	A beast the color of winter. Sierral Club Books, San Francisco, California, USA. 1983.				
	Smith, C.A.	Evaluation and management implications of long-term trends in coastal mountain goat populations in southeast Alaska. Biennial Symposium of the Northern Wild Sheep and Goat Council 4: 395-424. 1984.				
	Wigal, R.A. and V.L. Coggins	Mountain goat. Pages 1008-1020 in J.A. Chapman and G.A. Feldhamer, editors. Wild mammals of North America: biology, management and economics. John Hopkins University Press, Baltimore, Maryland, USA. 1982.				
	Hamilton, S., J. Carlisle, and R. Garwood	Human effects on mountain goats in the Sawtooth National Forest. Sawtooth National Recreation Area. Headquarters, Star Route, Ketchum, Idaho, USA.				
	USFS (U.S. Forest Service)	Environmental assessment for outfitted and guided backcountry helicopter skiing on the Sawtooth National Forest. U.S. Forest Service, Sawtooth National Forest, Ketchum, Idaho, USA. 1977.				

Reference			Species	Activity	Effect	Conclusion
#	Author	Report				
11	**Olliff, T., K. Legg, and B. Kaeding, editors.**	Effects of winter recreation on wildlife of the Greater Yellowstone Area: a literature review and assessment. Report to the Greater Yellowstone Coordinating Committee. Yellowstone National Park, Wyoming. 315 pages. 1999. Page 90.	Mtn Goat	Helicopter	• Goats are sensitive to loud noises, so snowmobiles and helicopters could affect their behaviour depending upon the proximity and duration of the disturbance (Singer and Doherty, 1985; Pedevillano and Wright, 1987, Cote, 1996). • Goats are capable of habituation if they are gradually acclimatized and negative associations are avoided (Penner, 1988). This possibility is best achieved when stimuli sources are localized and highly predictable (Penner, 1988; Singer and Doherty, 1985). • Sudden loud noises from helicopters elicited alarm responses from goats that have been habituated to human activity (Penner, 1998; Cote, 1996). • In the Greater Yellowstone Area, most occupied goat winter range occurs within established national wilderness areas where motorized travel is strictly prohibited. • Idaho Department of Fish and Game identified use of helicopters for skiing as an activity potentially detrimental to goats. Where the two are in conflict, goats require protection (Idaho Department of Fish and Game, 1990).	Goats are capable of habituation under certain circumstances when disturbance is localized and predictable, however they do not habituate to the unpredictable, loud disturbance created by helicopters.
	Singer, F.J. and J.L. Doherty	Managing mountain goats at a highway crossing. Wildl. Soc. Bull. 13:469-477. 1985.				
	Pedevillano, C. and R.G. Wright	The influence of visitors on mountain goat activities in Glacier National Park, Montana. Biological Conservation 39: 1-11. 1987.				
	Cote, S.D.	Mountain goat responses to helicopter disturbance. Wildl. Soc. Bull. 24(4): 681-685. 1996.				
	Penner, D.F.	Behavioural response and habituation of mountain goats in relation to petroleum exploration at Pinto Creek, Alberta. Biennial Symposium of the Northern Wild Sheep and Goat Council 6:141-158. 1988.				
	Idaho Department of Fish and Game	Mountain goat management plan, 1991-1995. Boise, Idaho, USA. 1990.				
1	**Pojar, Rosamund**	Human Disturbance and Mountain Ungulates. Page 2.	Mtn Goat, Bighorn Sheep	Recreation	Human disturbance from snowmobiles, helicopters, hunting, hikers, skiers all add up and make the animals increasingly less able to cope with cold, starvation and natural predation (p2).	The overall impacts of sustained disturbance to ungulates are decreased immunity to disease, increased wear on the body, reduced fertility rates and eventually, population decline (p2).

Annotated Bibliography on the Effects of Motorized Recreation on Grizzly Bears and Rocky Mountain Ungulates

Reference			Species	Activity	Effect	Conclusion
#	Author	Report				
	Pojar, Rosamund	Human Disturbance and Mountain Ungulates. Page 2.	Mtn Goat, Bighorn Sheep	Snowmobile	Evidence shows that tracks made by snowmobiles are used by predators (wolves) for easier travel and may contribute to greater levels of predation (p2).	Snowmobile tracks are used by wolves and may be contributing to greater levels of predation.
	Pojar, Rosamund	Human Disturbance and Mountain Ungulates. Page 3.	Mtn Goat	Recreation	Since the 1970's population numbers are recovering as the result of changes to hunting practices from open season goat hunting to limited entry. An overall net increase in numbers could mask declines in the rate of reproduction that may occur as the result of increased recreational disturbance (p3).	Reproduction rates are likely declining in response to recreational disturbance, however demographic impacts are masked by population recovery since the reduction in harvest levels in the 1970's.
2	**Pojar, Rosamund**	Human Disturbance and Mountain Ungulates. Page 1.	Mtn Goat	Recreation	When disturbance displaces animals from preferred habitat: • Sub-optimal habitat is used where forage is poorer resulting in greater expenditure of time and energy to take in the same amount of food. Foster and Rahs (1981, 1983) found that mountain goats disturbed by helicopter and drilling in the Stikine moved away from preferred habitat to rocky, sparsely vegetated areas containing less preferred forage species for the duration of the disturbance. • Fleeing response represents lost opportunity to rest and conserve food reserves. Rest and conservation of food reserves is especially critical in late winter or early spring when food reserves are already low. • Panic runs to avoid disturbance, especially if unexpected, can result in direct injury or abortion in females. • Animals are in new, unfamiliar surroundings where they are more susceptible to predation.	When mountain goats flee preferred habitats in response to disturbance, potential results include: • use of sub-optimal habitat requiring greater energy expenditure for foraging; • lost opportunity to rest and conserve food resources; • injury, or abortion in females; • increased predation.
	Foster, B.R. and E.Y. Rahs	Relationships between mountain goat ecology and proposed hydro electric development on the Stikine River, B.C. Report prepared for BC Hydro by Marr-Terr Enviro Research Ltd., Vancouver (Report no. MT-1). 1981.				
	Foster, B.R. and E.Y. Rahs	Mountain goat response to hydroelectric exploration in Northwestern British Columbia. Environ. Manage. 7:189-197. 1983.				

Annotated Bibliography on the Effects of Motorized Recreation on Grizzly Bears and Rocky Mountain Ungulates

Reference			Species	Activity	Effect	Conclusion
#	Author	Report				
1	Sheppard, Kathleen McLellan, B.N. Tietje, W.D. and R.L. Ruff Brannon, R.D., R.D. Mace and A.R. Dood McLellan, B.N. and R.D. Mace	Impacts of Off-Road Vehicles on Wildlands: A Review. Special Publication No. 7 of the Castle-Crown Wilderness Coalition. Page 6-7. Relationships between human industrial activity and grizzly bears. Int. Conf. Bear Research and Management 8:57-64. 1990. Responses of black bears to oil development in Alberta. Wildl. Soc. Bull. 11(2):99-112. 1983. Grizzly bear mortality in the Northern Continental Divide Ecosystem, Montana. Wildl. Soc. Bull. 16:262-269. 1988. Behaviour of grizzly bears in response to roads, seismic activity, and people. Preliminary Report, Canadian Border Grizzly Project, Cranbrook, B.C. 53pp. 1985.	Grizzly Bear	Open roads - direct human caused mortality	• McLellan (1990) notes that road access into an area leads to increased human use of all kinds which places grizzly bears at greater risk to human caused mortality, including hunting, poaching, and management removals and kills. Of the collared grizzly bear mortalities reported in the literature for six study areas in Alberta, B.C., Montana and Idaho, 68% of known mortalities were the result of illegal kills and hunting. • Tietje and Ruff (1983) state that "As new roads are opened and access is provided to previously inaccessible tracts, human bear interactions will increase. Legal and illegal taking of bears will rise and without appropriate management provisions, the consequences on local bear populations could be severe." • Brannon et al (1988) implicates road access to legal and illegal grizzly bear hunting mortality in the southwestern Alberta, Continental Divide ecosystem. • McLellan and Mace (1985) found hunting and poaching to be problems when new roads open, and recommend that roads be closed whenever possible to reduce grizzly bear habituation and death.	Road access facilitates increased human activity, inevitably increasing human caused grizzly mortality due to hunting, poaching and management removals and kills. Without appropriate access management, consequences on bear populations could be severe.
2	Sheppard, Kathleen McLellan, B.N. and D.M. Shackleton McLellan, B.N.	Impacts of Off-Road Vehicles on Wildlands: A Review. Special Publication No. 7 of the Castle-Crown Wilderness Coalition. Page 7. Grizzly bears and resource extraction industries: habitat displacement in response to seismic exploration, timber harvesting and road maintenance. J. Appl. Ecol. 26:371-380. 1989. Relationships between human industrial activity and grizzly bears. Int. Conf. Bear Research and Management 8:57-64. 1990.	Grizzly Bear	Open roads traffic	Bears reacted more strongly to approaching vehicles when the vehicle was in the open. Grizzlies fled from an approaching vehicle over 50% of the time when the vehicle was in forest and came closer than 150 m, but over 60% of the time when the bear was in an open area (McLellan and Shackleton 1989b).	McLellan (1990) concludes, "Vehicles on roads can harass bears, displace them from quality habitats, and cause reduced bear use of altered habitats. . ."

Annotated Bibliography on the Effects of Motorized Recreation on Grizzly Bears and Rocky Mountain Ungulates

Reference			**Species**	**Activity**	**Effect**	**Conclusion**
#	**Author**	**Report**				
3	Sheppard, Kathleen US Interagency Grizzly Bear Committee	Impacts of Off-Road Vehicles on Wildlands: A Review. Special Publication No. 7 of the Castle-Crown Wilderness Coalition. Page 5. Grizzly Bear Compendium. Nat. Wildl. Fed., Washington, D.C. 540pp. 1987	Grizzly Bear	Open roads – direct human caused mortality; and traffic and road density	US Interagency Grizzly Bear Committee (1987) identifies the major impacts of roads on grizzlies as follows: • Access into grizzly habitat and consequent escalation of human activities in both frontcountry and backcountry areas; • Human activity causing displacement or disruption of normal behaviour patterns; • Physiological stress; • Habitat loss to road construction and industrial activities.	The major impacts of roads on grizzlies are: increased human access and activity in grizzly habitat (leading to increased mortality due to hunting, poaching and management); normal behaviour pattern disruption; physiological stress; and habitat loss.
4	Sheppard, Kathleen Freddy, D.J., W.M. Bronaugh, and M.C. Fowler	Impacts of Off-Road Vehicles on Wildlands: A Review. Special Publication No. 7 of the Castle-Crown Wilderness Coalition. Page 5. Responses of mule deer to disturbance by persons afoot and snowmobiles. 1986	Ungulate Winter Range - Mule deer	Winter recreation	A study by Freddy et al (1986) indicates that mule deer react less strongly to snowmobiles than to people on foot. However, snowmobiles travel further in the course of a day and are capable of encountering many more animals. The reaction of mule deer to human intrusion represents an additional energy cost at a time when food is of poor quality and in short supply. To keep the disturbance of wintering mule deer to minimum would require that persons on foot and on snowmobiles avoid deer by distances of more than 334 and 470meters, respectively.	The reaction of mule deer to human intrusion represents an additional energy cost at a time when food is of poor quality and in short supply.
5	Sheppard, Kathleen Horejsi, B.L.	Impacts of Off-Road Vehicles on Wildlands: A Review. Special Publication No. 7 of the Castle-Crown Wilderness Coalition. Page 5. Some thoughts and observations on harassment and bighorn sheep. Biennial Meeting Northern Wild Sheep Council. Jackson, Wyoming. 14pp. 1976.	Bighorn sheep	Snowmobile	Human intrusions into sheep habitat in the Sheep River region of Alberta, resulted in increased energy expenditure by the animals, altered activity patterns, changes in distribution and possibly increased predation. "Causing sheep to abandon preferred parts of their range forces them to spend more time in peripheral areas. The animals will be less sure of themselves, more excitable, and burn more energy. They may be more susceptible to predation, accidents and hunters." The observed abandonment of preferred range was largely caused by snowmobiles, as well as improvement in the quality of roads (Horejsi 1976).	Impacts of snowmobile use on wintering bighorn sheep include increased energy expenditure; altered activity patterns; changes in distribution, and possibly increased predation.

Annotated Bibliography on the Effects of Motorized Recreation on Grizzly Bears and Rocky Mountain Ungulates

Reference			Species	Activity	Effect	Conclusion
#	Author	Report				
1	Wakkinen, W. and W. Kasworm	Grizzly Bear and Road Density Relationships in the Selkirk and Cabinet-Yahk Recovery Zones. Page 22.	Grizzly bear	Open roads-traffic and human caused mortality	Roads can affect populations in at least 2 ways; by displacing animals from otherwise suitable habitat because of high levels of disturbance and by increased human access resulting in higher mortality from hunting, illegal killing, and removal due to habituation.	Roads can affect populations in at least 2 ways; by displacing animals from otherwise suitable habitat because of high levels of disturbance, and by increased human access resulting in higher mortality from hunting, illegal killing, and removal due to habituation.
2	Wakkinen, W. and W. Kasworm	Grizzly Bear and Road Density Relationships in the Selkirk and Cabinet-Yahk Recovery Zones. Page 22, 23	Grizzly bear	Open roads-density	• In the Selkirk and Cabinet-Yahk Recovery Zones, areas where total road density exceeded 2mi/sq.mile and open road density exceeded 1mi/sq. mile, were used less than expected (avoided). Unroaded areas were used more than expected (preferred) (page 1, 22). • Wakkenin and Kasworm suggest that the proportion of the home ranges with >2mi/sq.mi total road density; >1 mi/sq.mi open road density; and the amount of core area, i.e. no open or gated roads, are appropriate access management standard categories (page 1). • Use/availability results regarding vegetated, barriered, and gated roads were not statistically significant, but appeared to indicate greater use of vegetated and barriered roads which lacked any motorized use (page 22, 23). Total road density use calculations include vegetated, barriered, gated and open roads. • Consideration should be given to habitat quality in the proximity of road closures. Certain types of habitat may not be sufficiently represented in all Bear Management Units and require additional protection (e.g. spring range or high quality foraging sites) (page 1).	Grizzly bears in the Selkirk and Cabinet-Yahk Recovery Zones avoided areas where total road density exceeded 2mi/sq.mile and open road density exceeded 1mi/sq. mile, and used unroaded areas more than expected.

Annotated Bibliography on the Effects of Motorized Recreation on Grizzly Bears and Rocky Mountain Ungulates

Reference			Species	Activity	Effect	Conclusion
#	Author	Report				
1	Weaver, J.L.	The Transboundary Flathead: A Critical Landscape for Carnivores in the Rocky Mountains. Wildlife Conservation Society. 2001. Page 22	Grizzly bear	Open roads-direct human caused mortality and traffic.	Overall, resilience is low in grizzly bears because "in many interior areas of North America grizzly bears rely on berries in late summer for weight gain and fat deposition necessary for successful hibernation and reproduction. During years of poor berry production, bears move widely in search of alternative foods that can bring them into contact with humans and increased risk of mortality. Grizzly bears have a low reproductive rate (0.5-0.8 cubs/adult female/year) and cannot compensate with higher reproduction for increased mortality. Hence, low mortality of adult females is critical to the persistence of grizzly bear populations … Increased vehicle access can displace some grizzly bears by up to 1 km and lead to greater mortality by poaching. Sub-adult females do not disperse far, often establishing a range within or adjacent to their mother's home range."	Low mortality of adult females grizzly bears is critical to the persistence of grizzly bear populations because grizzly bear reproductive capacity is inherently low. Increased vehicle access can displace some grizzly bears by up to 1 km and lead to greater mortality by poaching.
2	Weaver, J.L.	The Transboundary Flathead: A Critical Landscape for Carnivores in the Rocky Mountains. Wildlife Conservation Society. 2001. Page 23	Grizzly bear	Open roads-direct human caused mortality, traffic and density.	"Due to the vulnerability of grizzly bear populations (especially adult females) to excessive killing by humans, security areas (areas > 500m from high use roads/trails and > 9 sq. km in size: sensu Mattson 1993) can be considered vital 'habitats'. Recent studies have determined that security areas comprised an average of 68% of the home range of adult females (Mace and Waller 1997, Gibeau et al In Press)."	"Due to the vulnerability of grizzly bear populations (especially adult females) to excessive killing by humans, security areas (areas > 500m from high use roads/trails and > 9 sq. km in size: sensu Mattson 1993) can be considered vital 'habitats' (Weaver, page 23)."
3	Weaver, J.L.	The Transboundary Flathead: A Critical Landscape for Carnivores in the Rocky Mountains. Wildlife Conservation Society. 2001. Page 42, 43.	Grizzly bear	Open roads-direct human caused mortality, traffic and density.	Grizzly bears "lack resiliency and thus are vulnerable to excessive mortality that may not be easily detected nor reduced…hence there is uncertainty and risk….. Wildlife scientists throughout the world are recognizing that carnivores need some network of core reserves where security from human impacts takes precedence, and ecological integrity is restored or maintained with natural processes (Weaver et al 1996, Noss et al. 1999). Core reserves can benefit many wildlife in several ways by: (1) allowing undisturbed access to important habitats where energetic needs can be fulfilled, (2) minimizing potential for illegal or incidental killing by humans, and (3) retaining wary behaviour rather than habituation to humans."	Networks of core reserves where wildlife are protected from human impacts are needed particularly by carnivores. Core reserves benefit wildlife by: "(1) allowing undisturbed access to important habitats where energetic needs can be fulfilled, (2) minimizing potential for illegal or incidental killing by humans, and (3) retaining wary behaviour rather than habituation to humans (Weaver, page 42, 43)."

Annotated Bibliography on the Effects of Motorized Recreation on Grizzly Bears and Rocky Mountain Ungulates

Reference			Species	Activity	Effect	Conclusion
#	Author	Report				
1	Wildlife Branch (B.C.)	Draft Guidelines for Mitigating Impacts of Commercial Recreation on Wildlife in B.C. 2001. Page 17.	Ungulate Winter Range	Winter recreation	In ungulate winter range it is the cumulative incremental effects of seemingly innocuous human disturbance that are of greatest concern. Consequences of disturbance are often subtle, sub-clinical and delayed. Chronic stress can impair immune responses, animals lose weight and die of malnutrition, others are less able to escape predators or withstand disease, females abort fetuses, newborns fail to thrive because of inadequate milk supplies or interrupted maternal care.	The cumulative incremental effects of human disturbance cause the most profound long-term impacts on the wintering ungulate population.
	Wildlife Branch (B.C.) Joslin, G.	Draft Guidelines for Mitigating Impacts of Commercial Recreation on Wildlife in B.C. 2001. Page 23. Mountain goat population changes in relation to energy exploration along Montana's Rocky Mountain Front. Biennial Symposium of the Northern Wild Sheep and Goat Council 5:253-271. 1986.	Mtn Goat	Helicopter	Of all the ungulate species, mountain goats appear the most sensitive to disturbance, especially by helicopters. In Montana, increased disturbance by helicopters reduced productivity of mountain goats (Joslin 1986).	Increased disturbance by helicopters reduced productivity of mountain goats.
3	Wildlife Branch (B.C.) Cote, S.D. Cote, S.D. and M. Festa-Bianchet Foster, B.R. and E.Y. Rahs	Draft Guidelines for Mitigating Impacts of Commercial Recreation on Wildlife in B.C. 2001. Page 24. Mountain goat responses to helicopter disturbance. Wildlife Society Bulletin 24: 681-685. 1996. XX. 1997 A study of canyon dwelling mountain goats in relation to proposed hydroelectric development in NW B.C. Biological Conservation 33: 209-228. 1983	Mtn Goat	Helicopter	• In the Alberta Rockies, mountain goats moved in response to helicopters which were greater than 1.5 km distant (Cote 1996, Cote and Festa-Bianchet 1997). • Foster and Rahs (1983) reported that goats required a buffer area of 2 km to completely avoid harassment.	Mountain goats moved in response to helicopter over flights greater than 1.5km in distance, indicating at minimum, a physiological stress response by the animal to flights at that distance.

Reference			Species	Activity	Effect	Conclusion
#	Author	Report				
4	Wildlife Branch (B.C.) Penner, D.F	**Draft Guidelines for Mitigating Impacts of Commercial Recreation on Wildlife in B.C. 2001. Page 24.** Behavioural response and habituation of Mountain Goats in relation to petroleum exploration at Pinto Creek, Alberta. Biennial Symposium of the Northern Wild Sheep and Goat Council 6: 141-158. 1988.	Mtn Goat	Helicopter	In summer goats can tolerate foot and vehicular traffic, "if they are gradually acclimatized and negative associations are avoided" (Penner 1998), especially if activity is localized and highly predictable, but do not appear to habituate to sudden, unpredictable stimuli such as aircraft overflights or predators. Penner (1998) reported that mountain goats accepted indirect, persistent noise (i.e. generator noise) but showed alarm response to aircraft.	Goats do not appear to habituate to sudden unpredictable stimuli such as over flights.
	Wildlife Branch (B.C.)	Draft Guidelines for Mitigating Impacts of Commercial Recreation on Wildlife in B.C. 2001. Page 19.	Mtn Goat	Helicopter	In the Todagin Mountain area, there appears to be a noticeable displacement of thinhorn sheep and mountain goats within 4 to 5 km of the main flight path related to frequent aircraft/helicopter use associated with mine development. (S. Sharpe, pers. comm.).	Mountain goats are displaced from habitat within 4 to 5 km of a frequently used aircraft/helicopter flight path.
	Wildlife Branch (B.C.) Olliff, T., K. Legg and B. Kaeding (eds.) Paquet, M.M., and R.A. Demarchi	Draft Guidelines for Mitigating Impacts of Commercial Recreation on Wildlife in B.C. 2001. Page 19. Effects of winter recreation on wildlife of the Greater Yellowstone Area: a literature review and assessment. Report to the Greater Yellowstone Coordinating Committee. Yellowstone National Park, WY. 315 pp. 1999. Stone's Sheep of the northern Rockies: the effects of access. Prepared for the Foundation of North American Wild Sheep and Guide Outfitters Association of British Columbia. 1999.	Bighorn Sheep	Snowmobile and helicopter	In addition to habitat needs generally described for hoofed mammals, wild sheep require steep cliffs for escape terrain and lambing (Olliff et al.; Paquet and Demarchi). Recreational activities that prevent wild sheep from accessing escape terrain, or increases time spent in these areas, probably increases stress, and may lower foraging efficiency.	If bighorn sheep access to or from steep cliffs is disrupted, impacts may include increased stress levels and decreased foraging efficiency.

Reference			Species	Activity	Effect	Conclusion
#	Author	Report				
5	Wildlife Branch (B.C.) Stockwell, C.A. G.C. Bateman and J. Berger Bleich, V.C., R.T. Bowyer, A.M. Pauli, M.C. Nicholson and R.W. Anthes Geist, V.	Draft Guidelines for Mitigating Impacts of Commercial Recreation on Wildlife in B.C. 2001. Page 19. Conflicts in national parks: a case study of helicopters and bighorn sheep time budgets at the Grand Canyon. Biol. Cons. 56: 317-328. 1991. Mountain sheep helicopter surveys: ramifications for the conservation of large mammals. Biological Conservation 70: 1-7 1994. Behaviour – Chapter 19. Pages 283-296 in JL Schmidt and D.L Gilbert, eds. Big game of North America- Ecology and management. Stackpole Books, Harrisburg, Pa. 1978.	Bighorn Sheep	Snowmobile and helicopter	Chronic exposure to disturbance potentially reduces forage efficiency (Stockwell et al. 1991, Beich et al. 1994) that, in turn, impacts growth and survival (Geist 1978). Chronic stress can also compromise the immune system in wild sheep, increasing their vulnerability to diseases.	Chronic exposure to disturbance potentially reduces forage efficiency that, in turn, impacts growth and survival. Chronic stress can also compromise the immune system in wild sheep, increasing their vulnerability to diseases.
	Wildlife Branch (B.C.)	Draft Guidelines for Mitigating Impacts of Commercial Recreation on Wildlife in B.C. 2001. Page 19.	Bighorn Sheep	Helicopter	A five year research program in the Churn Creek area suggests bighorn sheep may be as sensitive to helicopter disturbance as mountain goats. Bighorns have been observed to flee from helicopters that are 1 to 2 km away (J. Youds, pers. comm.)	Bighorn sheep may be as sensitive to helicopter disturbance as mountain goats.

Annotated Bibliography on the Effects of Motorized Recreation on Grizzly Bears and Rocky Mountain Ungulates

Reference			Species	Activity	Effect	Conclusion
#	Author	Report				
6	Wildlife Branch (B.C.) Aune, K.E. and W.F. Kasworm Kasworm, W.F. and T.M. Manley Mattson, D.J., R.R. Knight, and B. M. Blanchard McLellan, B.N. and D.M. Shackleton	Draft Guidelines for Mitigating Impacts of Commercial Recreation on Wildlife in B.C. 2001. Page 28. Final report on East Front grizzly bear study Montana Department of Fish, Wildlife and Parks. Helena, Montana. 1989. Road and trail influences on grizzly bears and black bears in NW Montana. International Conference on Bear Research and Management 8: 79-85. 1990. The effects of development and primary roads on grizzly bear habitat use in Yellowstone National Park. 1987. Grizzly bears and resource extraction industries: effects of roads on behaviour, habitat use and demography. Journal of Applied Ecology 25: 451-460. 1988.	Grizzly Bear	Open roads-traffic	Vehicular traffic along open roads can displace grizzly bears from 100-900m (Aune & Kasworm 1989; Kasworm & Manley 1990; Mattson et al. 1987; McLellan & Shackleton 1988.)	Vehicular traffic along open roads can displace grizzly bears from 100-900m.

Annotated Bibliography on the Effects of Motorized Recreation on Grizzly Bears and Rocky Mountain Ungulates

Reference			Species	Activity	Effect	Conclusion
#	Author	Report				
1	Wilson, S.F. and D.M. Shackleton Foster, B.R. and E.Y. Rahs Cote, S.D.	Backcountry Recreation and Mountain Goats: A Proposed Research and Adaptive Management Plan. Wildl. Bulletin No. B-103. March, 2001. Page 2, 12. Mountain goat response to hydroelectric exploration in Northwestern British Columbia. Environ. Manage. 7:189-197. 1983. Mountain goat responses to helicopter disturbance. Wildl Soc Bull 24(4): 681-685. 1996	Mtn Goat	Helicopter	Acute responses to helicopter disturbance are well studied, highly variable and include fleeing, temporary range abandonment; group dissolution; injury; increased vigilance and nanny-kid separations (temporary and permanent) (page 12). Medium term chronic behaviour response to helicopter disturbance would be abandonment of preferred (disturbed) habitat for sub optimal habitat where forage and escape terrain are less available. This behavioural response may have significant consequences at critical times of the year (e.g. spring and summer) (page 12, 13). Foster and Rahs (1983) reported that: • Mountain goats in the Stikine responded to aircraft and ground disturbance during > 80% of events (n=667) and recorded "severe flight responses" during 33% of observations. 55% of severe flight responses were observed when disturbances occurred at distances <100m. • Response behaviour was correlated with distance to disturbance and the distance at which the disturbance was visible, as well as to available security cover, but was not dependent on the time of year, group size, or vertical orientation of disturbance (i.e. approach from above or below). Severe responses were less common when goats were located in rocky terrain than in densely vegetated habitat. • Disturbance caused temporary range abandonment. Cote (1996) reports that: • distance between animals and helicopters is the most important factor affecting goat responses; and • 7% of helicopter disturbance caused the disintegration of social groups.	Acute responses to helicopter disturbance are include: • fleeing; • temporary range abandonment; • group dissolution; • injury; • increased vigilance; • nanny-kid separations (temporary and permanent). Goat response is determined by distance to disturbance and distance to escape terrain.

Reference			Species	Activity	Effect	Conclusion
#	Author	Report				
2	Wilson, S.F. and D.M. Shackleton	Backcountry Recreation and Mountain Goats: A Proposed Research and Adaptive Management Plan. Wildl. Bulletin No. B-103 March, 2001. Page 2, 3.	Bighorn Sheep	Helicopter	Intense helicopter disturbance (100m in altitude) caused dramatic reaction in sheep (Bleich et al., 1994). Bighorn sheep in Alberta reacted "explosively" to the sight and sound of a helicopter, often fleeing when the helicopter was 1.6km away (Horejsi, 1976). Overflights at 400m above the ground at Ram Mtn. Alberta resulted in elevated heart rates lasting for up to one hour post disturbance (Stemp, 1983). Both Stemp (1983) and MacArthur et al. (1982) noted the poor correlation between cardiac and observable behavioural responses. Significant cardiac and observable responses persisted even when sheep appeared to exhibit behaviour consistent with habituation, and there was a strong positive relationship between responses to disturbance and the distance sheep were from escape terrain (Stemp, 1983).	**Helicopter disturbance is shown to cause dramatic reaction in bighorn sheep in terms of observable behavioural response and cardiac response.** Lack of overt behavioural response does not indicate lack of physiological response.
	Bleich, V.C., R.T. Bowyer, A.M. Pauli, M.C. Nicholson, and R.W. Anthes	Mountain sheep (Ovis canadensis and helicopter surveys: ramifications for the conservation of large mammals. Biol.Conserv. 70:1-7. 1994.				
	Horejsi, B	Some thoughts on harassment and bighorn sheep. Biennial Symposium of the North. Wild Sheep and Goat Counc. 1:149-155. 1976.				
	Stemp, R.E.	Heart rate responses of bighorn sheep to environmental factors and harassment. M.Sc. thesis, Univ. Calgary, AB. 1983.				
	MacArthur, R.A., V. Geist and R.H. Johnston	Cardiac and behavioural responses of mountain sheep to human disturbance. J. Wildl. Manage. 46:351-358. 1982.				

Annotated Bibliography on the Effects of Motorized Recreation on Grizzly Bears and Rocky Mountain Ungulates

Reference			**Species**	**Activity**	**Effect**	**Conclusion**
#	**Author**	**Report**				
1	Wittinger, Tom	Effects of Recreation on Rocky Mountain Wildlife: A Review for Montana. 1999 Chapter 7, page 7.25.	Grizzly Bear	Snowmobile and helicopter	• Vehicles operating within 3300 feet of denned bears, caused heart rates to increase (Reynolds et al. 1986). • The greatest potential for disturbance from snowmobile activity occurs when females with cubs are still confined to the den vicinity during spring, and when emerging bears descend to lower elevations, and more gentle terrain which is more suitable for snowmobiling (Mace and Waller 1997). • Over flights by small aircraft near the time of den emergence caused denned bears' heart rates to increase (Reynolds et al 1986). • Numerous studies have indicated that physiological stresses can result in serious consequences to bears (Reynolds and Hechtel 1980; Watts and Jonkel 1989; Mace and Waller 1997).	Physiological stress has serious consequences for grizzlies, and physiological stress in terms of increased heart rate, is documented as the result of motor vehicle use within 3300 ft of denned bears. Near the time of den emergence however, is when grizzlies are most seriously physiologically impacted by snow related motorized activity.
	Reynolds, P.E., H.V.Reynolds and E.H. Follmann	Responses of grizzly bears to seismic surveys in northern Alaska. Int. Conf. on Bear Res. And Manage. 6:169-175. 1986.				
	Reynolds, D.G. and J. Hechtel	Big game investigation. Structure, status, reproductive biology, movements, distribution and habitat utilization of a grizzly bear population. Fed. Aid. Wildl. RestProj. W17-11, Job 4.1R. Job Prog. Rpt, July 1, 1978-June 30, 1979. Alaska Dept. Fish and Game, Juneau. 66pp.				
	Watts, P.D. and C Jonkel	Energetic cost of winter dormancy in grizzly bears. J. Wildl. Manage. 54(4): 654-656. 1989				
	Mace, R. and J. Waller	Final Report: grizzly bear ecology in the Swan Mountains, Montana. Montana Fish, Wildlife and Parks, Helena, MT. 191 pp. 1997.				

Appendix 1. Summary of the Annotated Bibliography of the Effects of Motorized Recreation on Grizzly Bear and Rocky Mountain Ungulates

Species	Activity	Conclusion	Reference #
Ungulate Winter Range-Elk	Winter recreation	Elk rely on fairly restricted winter ranges in which food and cover may be limited or of marginal quality, and consequently, any activity preventing the animals from using all or part of that range could reduce their ability to survive or to successfully reproduce.	Olliff 1
Ungulate Winter Range-Elk	Snowmobile	Temporary displacement of elk from winter range as the result of snowmobile activity is documented in northeastern Oregon and Yellowstone National Park.	Olliff 2
Ungulate Winter Range-Elk	Snowmobile	Elk are less likely to be displaced by, or exhibit flight responses, when disturbance is predictable and limited to established trails.	Olliff 3
Ungulate Winter Range-Elk	Snowmobile	Overland motorized activity has more potential for causing elk flight response, since disturbance in these areas is unpredictable.	Olliff 4
Ungulate Winter Range-Moose	Human activity	Immediate response to disturbance by moose is physiological stress, which, because it is not physically obvious, has often been misinterpreted as a high degree of tolerance to human activity.	Olliff 5
Ungulate Winter Range-Moose	Human activity	The most severe impacts to wintering animals are the energetically costly flight and stress responses, resulting from unpredictable disturbance.	Olliff 6
Ungulate Winter Range-Moose	Snowmobile	Snowmobile activity causes displacement and disturbance responses in moose. The most severe impacts are in areas where overland motorized activity is permitted, since disturbance is these areas is unpredictable.	Olliff 7
Ungulate Winter Range-Moose	Roads and groomed trails	Moose tend to use plowed roads and groomed trails as travel routes, which combined with their delayed flight response, invites collisions with vehicles.	Oliff 8
Ungulate Winter Range-Mule deer	Winter recreation	The reaction of mule deer to human intrusion represents an additional energy cost at a time when food is of poor quality and in short supply.	Shepp 4
Ungulate Winter Range	Winter recreation	In ungulate winter range it is the cumulative incremental effects of seemingly innocuous human disturbance that are of greatest concern. Consequences of disturbance are often subtle, sub-clinical and delayed. Chronic stress can impair immune responses, animals lose weight and die of malnutrition, others are less able to escape predators or withstand disease, females abort fetuses, newborns fail to thrive because of inadequate milk supplies or interrupted maternal care.	Wild 1
Ungulate Winter Range	Human activity	Human disturbance exacts an energetic disadvantage on wintering animals. Overt behavioural responses are highly variable, and range from an increase in general alertness to outright flight. Physiological responses include increased metabolism, which could result in illness, decreased reproduction and death.	Canfi 1
Ungulate Winter Range-	Snowmobile	Effects of snowmobile activity on wintering ungulates include: reduction in forage availability as the result of snow compaction; reduction of home range size; and displacement to less preferred habitats.	Canfi 3
Ungulate Winter Range	Winter recreation	Observations indicate that the most detrimental disturbances to wintering animals are those that are unanticipated.	Canfi 4
Ungulate Winter Range-	Snowmobile	Relatively high energy expenditure can result from human disturbance which does not elicit an overt behavioural response, but rather is only expressed through heart rate response. These results are confirmed and expanded for virtually every ungulate species.	Canfi 6
Ungulate Winter Range	Winter recreation	Winter recreation impacts to ungulates include increased energy expenditure; habitat displacement; and potential habituation.	Canfi 7

Appendix 1. Summary of the Annotated Bibliography of the Effects of Motorized Recreation on Grizzly Bear and Rocky Mountain Ungulates

Species	Activity	Conclusion	Reference #
Mountain goat	Helicopter	Impacts of helicopter over flights on mountain goats may include: increased energy expenditure; reduced fat accumulation; and changed physiological condition. These factors affect overall reproduction and survival.	Cote 1
Mountain goat	Helicopter	Goats reacted to flights which were greater than 1.5 km in distance, indicating a higher sensitivity to helicopter traffic than other open terrain ungulates.	Cote 2
Mountain goat	Snowmobile	Effects of snowmobile disturbance on wintering ungulates include: • increased heart rate; and • flight response representing energy expenditure with potential survival impacts, depending on winter range quality. Effects appear to be directly related to availability of security cover.	Graha 1
Mountain goat	Human activity	Goat populations have declined in response to human disturbance. Population declines appear to be related to improved access for hunting and poaching, abandonment of habitat due to alteration or disturbance, or continual stress as the result of human presence. Of these mechanisms, motorized access is considered the biggest threat.	Olliff 9
Mountain goat	Winter Recreation	Goats are considered a fragile wilderness resource, and although recreational use of their remote, rugged wintering range is unlikely, any use could be detrimental due to potential habitat abandonment or increased stress in response to disturbance.	Olliff 10
Mountain goat	Helicopter	Goats are capable of habituation under certain circumstances when disturbance is localized and predictable, however they do not habituate to the unpredictable, loud disturbance created by helicopters.	Olliff 11
Mountain goat and bighorn sheep	Recreation	The overall impacts of sustained disturbance to ungulates are decreased immunity to disease, increased wear on the body, reduced fertility rates and eventually, population decline.	Pojar 1
Mountain goat	Recreation	When mountain goats flee preferred habitats in response to disturbance, potential results include: • use of sub-optimal habitat requiring greater energy expenditure for foraging; • lost opportunity to rest and conserve food resources; • injury, or abortion in females; • increased predation.	Pojar 2
Mountain goat	Helicopter	Of all the ungulate species, mountain goats appear the most sensitive to disturbance, especially by helicopters. In Montana, increased disturbance by helicopters reduced productivity of mountain goats.	Wild 2
Mountain goat	Helicopter	Mountain goats moved in response to helicopter over flights greater than 1.5 km in distance, indicating at minimum, a physiological stress response by the animal to flights at that distance.	Wild 3
Mountain goat	Helicopter	Goats do not appear to habituate to sudden unpredictable stimuli such as over flights.	Wild 4
Mountain goat	Helicopter	Acute responses to helicopter disturbance are include: fleeing; temporary range abandonment; group dissolution; injury; increased vigilance; nanny-kid separations (temporary and permanent). Goat response is determined by distance to disturbance and distance to escape terrain.	Wilso 1
Mountain goat	Helicopter	Bighorn sheep and mountain goats respond negatively to helicopter over flights; for mountain goats a decline in reproduction rate is reported.	Canfi 5

Appendix 1. Summary of the Annotated Bibliography of the Effects of Motorized Recreation on Grizzly Bear and Rocky Mountain Ungulates

Species	Activity	Conclusion	Reference #
Bighorn sheep	Helicopter	Helicopter use impacts on bighorn sheep may include displacement from important winter feeding grounds; and elevated heart rates lasting up to one hour.	Becke 1
Bighorn sheep	Recreation	Bighorn sheep are highly susceptible to human disturbance, however their overt behavioural response is a poor indicator of the stress incurred by disturbance. Disturbance caused by recreation is considered to be a factor limiting populations of bighorn sheep in California.	Canfi 2
Bighorn sheep	Snowmobile	Impacts of snowmobile use on wintering bighorn sheep include increased energy expenditure; altered activity patterns; changes in distribution, and possibly increased predation.	Shepp 5
Bighorn sheep	Snowmobile and helicopter	Chronic exposure to disturbance potentially reduces forage efficiency that, in turn, impacts growth and survival. Chronic stress can also compromise the immune system in wild sheep, increasing their vulnerability to diseases.	Wild 5
Bighorn sheep	Helicopter	**Helicopter disturbance is shown to cause dramatic reaction in bighorn sheep in terms of observable behavioural response and cardiac response.** Lack of overt behavioural response is not indicative of physiological response.	Wilso 2
Grizzly bear	Open roads-traffic and road density	Grizzly bear use of suitable habitat in Montana declined as road density and road traffic increased.	Mace 1
Grizzly bear	Open roads-traffic and adjacent cover	In the Flathead grizzly bear study area, open road represents total habitat loss of 8.7% due to decreased use of areas within 250m of the road (p25)	McLe 1
Grizzly bear	Open roads - direct human caused mortality	Roads in the Flathead study area have a very high potential of being a significant factor in future population declines due to the fact that most bears are killed from roads, and a slight increase in the number of adult female bears in the harvest will cause the population to decrease	McLe 2
Grizzly bear	Open roads - traffic and direct human caused mortality	Grizzly bear studies in Montana and B.C. have found that bears habituated to human activity, especially moving vehicles, are more vulnerable to legal and illegal shooting.	Noss 1
Grizzly bear	Open roads direct human caused mortality	The majority of grizzly mortalities occur in close proximity to roads. Consequently, the ability of regions to maintain viable populations of grizzly bears is directly related to road density and human access.	Noss 2
Grizzly bear	Open roads - direct human caused mortality	Road access facilitates increased human activity, inevitably increasing human caused grizzly mortality due to hunting, poaching and management removals and kills. Without appropriate access management, consequences on bear populations could be severe	Shepp 1
Grizzly bear	Open roads traffic	"Vehicles on roads can harass bears, displace them from quality habitats, and cause reduced bear use of altered habitats..."	Shepp 2

Appendix 1. Summary of the Annotated Bibliography of the Effects of Motorized Recreation on Grizzly Bear and Rocky Mountain Ungulates

Species	Activity	Conclusion	Reference #
Grizzly bear	Open roads - direct human caused mortality, traffic and road density	The major impacts of roads on grizzlies are: increased human access and activity in grizzly habitat (leading to increased mortality due to hunting, poaching and management); normal behaviour pattern disruption; physiological stress; and habitat loss	Shepp 3
Grizzly bear	Open roads	Vehicular traffic along open roads can displace grizzly bears from 100-900m.	Wild 6
Grizzly bear	Open roads - direct human caused mortality and traffic	Roads can affect populations in at least 2 ways; by displacing animals from otherwise suitable habitat because of high levels of disturbance, and by increased human access resulting in higher mortality from hunting, illegal killing, and removal due to habituation.	Wakk 1
Grizzly bear	Open roads - road density	Grizzly bears in the Selkirk and Cabinet-Yahk Recovery Zones avoided areas where total road density exceeded 2mi/sq.mile and open road density exceeded 1mi/sq. mile, and used unroaded areas more than expected.	Wakk 2
Grizzly bear	Open roads - direct human caused mortality, traffic and road density	Low mortality of adult females grizzly bears is critical to the persistence of grizzly bear populations because grizzly bear reproductive capacity is inherently low. Increased vehicle access can displace some grizzly bears by up to 1 km and lead to greater mortality by poaching.	Weav 1
Grizzly bear	Open roads - direct human caused mortality, traffic and road density	"Due to the vulnerability of grizzly bear populations (especially adult females) to excessive killing by humans, security areas (areas > 500m from high use roads/trails and > 9 sq. km in size: sensu Mattson 1993) can be considered vital 'habitats'."	Weav 2
Grizzly bear	Open roads - direct human caused mortality, traffic and road density	Networks of core reserves where wildlife are protected from human impacts are needed, particularly by carnivores. Core reserves benefit wildlife by: "(1) allowing undisturbed access to important habitats where energetic needs can be fulfilled, (2) minimizing potential for illegal or incidental killing by humans, and (3) retaining wary behaviour rather than habituation to humans (Weaver, page 42, 43)."	Weav 3
Grizzly bear	Snowmobile	Grizzly bears are most susceptible to snowmobile disturbance in mid to late spring when females with cubs emerge from dens and have limited mobility.	Graha 2
Grizzly bear	Snowmobile	Physiological stress has serious consequences for grizzlies, and physiological stress in terms of increased heart rate, is documented as the result of motor vehicle use within 3300 ft of denned bears. Near the time of den emergence however, is when grizzlies are most seriously physiologically impacted by snow related motorized activity.	Witt 1

Appendix 1. Summary of the Annotated Bibliography of the Effects of Motorized Recreation on Grizzly Bear and Rocky Mountain Ungulates

Species	**Activity**	Conclusion	**Reference #**
All	ATV and snowmobile	Snowmobile and ATV use effect wildlife habitat through the substantial contribution they make to pollution and climate change. The two-stroke engine discharges roughly one third of its fuel unburned directly into the environment, and one hour of two-stroke engine use emits as much hydrocarbon pollution as driving a modern car for one year.	Beck 2
All	Noise	Human-made noise can cause the following responses in wild animals: 1.) preferred habitat abandonment; 4.) increased activity and depletion of energetic reserves; 5.) irritation, reduced feeding, altered social interactions or parenting. These effects have the potential to cause population declines.	Knigh 1
All	Noise	Noisy disturbance causes large mammals to alter their movements for up to two days following exposure. Short term changes to habitat use may result, however in the case that noisy disturbance is predictable and is not associated with harassment, ungulates in particular are capable of developing an adaptive, avoidance or habituation, behavioural response.	Knigh 2

Listed Vertebrate and Vascular Plant Species Occurring in the Cranbrook Forest District and in the Southern Rocky Mountain Management Plan Area

Prepared by

Isabelle Houde, M.Sc., RPBio
104 Douglas Road
Nelson, BC
V1L 2T7

BC Ministry of Sustainable Resource Management
333 Victoria Street
Nelson, B.C.
V1L 4K3

March 2002

Summary

The BC government designates and ranks species 'at risk' as either vulnerable in BC (Blue-listed), or endangered or threatened (Red-listed). The species are ranked at the provincial level and forest district level (BCCDC 2002). This document examines each listed species of vertebrates and vascular plants that occur, or potentially occur, in the Cranbrook Forest District and in the Southern Rocky Mountain Management Plan (SRMMP) Area. The SRMMP Area is a subset of the Cranbrook Forest District, and species that are Blue and Red listed in this district may not all occur in the SRMMP Area.

In the Cranbrook Forest District, 104 species of vascular plants and 32 species of vertebrates are either Blue or Red listed. Among the listed vertebrate species, at least 14 occur in the SRMMP Area, and 11 are also listed within the Identified Wildlife Management Strategy (IWMS). The IWMS aims to preserve elements of biodiversity that are believed to be inadequately addressed by other components of the BC Forest Practices Code, and recommends specific practices for those species and habitats (IWMS, 2001).

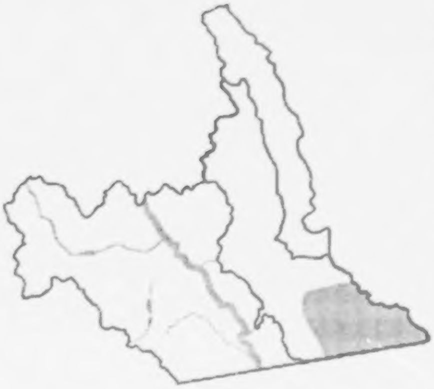
Part One of this document describes the species of vertebrates Red and Blue listed in the Cranbrook Forest District and potentially in the SRMMP. A brief habitat description is given and potential threats to the population are identified. Population range maps are presented. Yellow areas on maps indicate the SRMMP. Ranges for vertebrates were obtained from Cannings et al. (1999), Fraser et al. (1999), and from personal communications with local experts.

Part Two describes the species of vascular plants that are Red and Blue listed in the Cranbrook Forest District and in the SRMMP Area. Distribution maps are not provided because the information on the distribution of rare vascular plants is limited. However, species were grouped among the five vegetation zones found in the Rocky Mountains (Lowland, Montane, Steppe, Subalpine, Alpine) as described by Douglas et al. (2001a and b).

VERTEBRATES

Fish

Mottled Sculpin (*Cotus bairdi hubbsi*) – Blue List

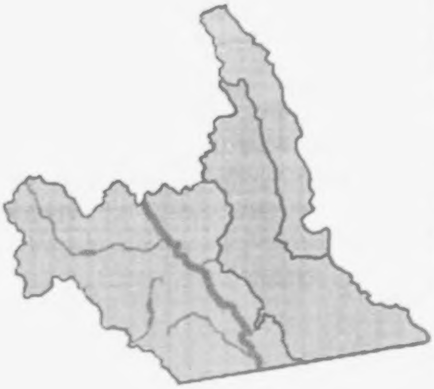


Habitat: Mottled Sculpin inhabit a wide range of stream sizes with cool and clear water. They are also found in montane lakes with, in some cases, warmer water as high as 20°C (Cannings and Ptolemy 1998).

Threats: Loss and alteration of habitat due to forest harvesting, associated roads, and to hydroelectric impoundments. Pollution of habitat from agricultural, urban, and industrial activities. Competition with introduced exotic species.

Distribution: Mottled Sculpin are found in the Flathead River Drainage. It is suggested that the population found in the Flathead River would be the only true population of Mottled Sculpin in British Columbia (Cannings 1993).

Westslope Cutthroat Trout (*Onchorynchus clarki lewisi*) – Blue List



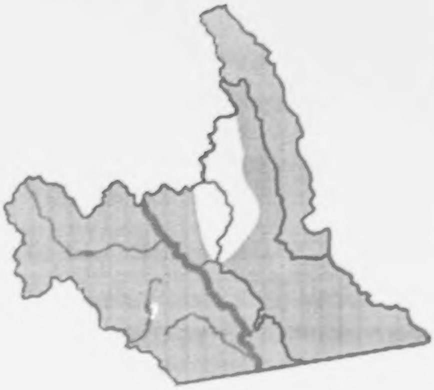
Habitat: Although Westslope Cutthroat Trout occurs in lakes and streams of various sizes, spawning is restricted to small streams (<5 m wide), (Scott and Crossman 1973). Abundance of juveniles in streams tends to decrease when channel size increases (Jordan et al. 2000).

Threats: Loss and alteration of habitat due to forest harvesting, associated roads, and to hydroelectric impoundments. Increase of angling harvest and recreational access (logging roads). Pollution of habitat from agricultural, urban and industrial activities. Competition and hybridization with introduced species of salmonids.

Distribution: Westslope Cutthroat Trout occur throughout the Cranbrook Forest Districts (Scott and Crossman 1973).

Bull Trout (*Salvelinus confluentus*) – Blue List

- Identified Wildlife Species



Habitat: Bull Trout occur in small, steep and cold streams with summer temperature less than 16°C in average (Haas 2001). Selected streams have clean water and are connected to allow fish movement throughout the stream system.

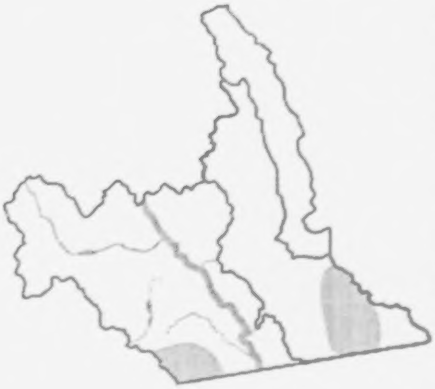
Threats: Loss and alteration of habitat due to forest harvesting, associated roads, and to hydroelectric impoundments. Increase of angling harvest and recreational access (logging roads). Pollution of habitat from agricultural, urban and industrial activities. Competition with introduced exotic species.

Distribution: Bull Trout occur throughout the Cranbrook Forest District, but are absent from the Bull River above the Abercrombie Dam (J. Bell, pers. comm.).

Amphibians

Tailed Frog (*Ascaphus truei*) – Red list (interior pop.)

- Identified Wildlife Species

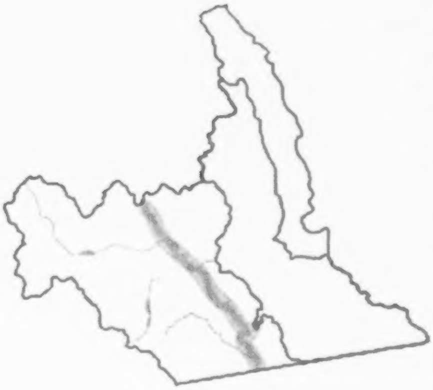


Habitat: Tailed Frog breed and mature in fast, small, permanent forest streams with clear, cold water. In the Kootenay Region, they are found at high elevations (1200-1900 m), mostly in the Englemann-spruce Sub-alpine Fir zone. They prefer streams with cobble or boulder substrates with little silt. Young and adult frogs use forest near streams for dispersal (Bunnell et al. 2001).

Threats: Habitat alteration due to forest harvesting. Tailed Frog are vulnerable to stream warming, and to increased siltation from cover removal and roads. Streamside buffers appear critical (Bunnell et al. 2001).

Distribution: Tailed Frog were found in the west Flathead River Drainage and in the Yahk River Drainage (T. Antifeau, pers. comm.)

Northern Leopard Frog (*Rana pipiens*) – Red List



Historical range

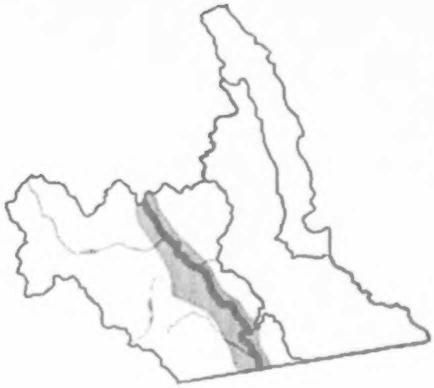
Habitat: Northern Leopard Frog use various moist and wet habitats (ponds, lakes, streams, marshes, wet meadows and riparian areas with thick vegetation) (Green and Campbell 1984; Cannings et al. 1999). The species hibernates on the bottom of lakes and streams (Green and Campbell 1984) and lays its eggs in ponds, lakes and wetlands.

Threats: Introduced predators (fish, bullfrogs), and intensive collection of individuals for educational purposes and laboratory studies. Loss and degradation of aquatic and wetland habitat due to urban and agricultural development.

Distribution: Northern Leopard Frog were historically found in the Columbia River Drainage, in the Creston Valley, and in the Osoyoos Area (Green and Campbell 1984). Since the mid 1990's, Northern Leopard Frog in BC are only known to occur in the Creston Valley (Waye 2000).

Reptiles

Painted Turtle (*Crysemys picta*) – Blue List



Habitat: Painted Turtle is a highly aquatic species found in waters with large amounts of aquatic vegetation such as ponds, lakes, marshes and slow moving rivers (Storm and Leonard 1995; Gregory and Campbell 1984). Movement on land may occur in the spring and fall when the turtles travel between summer habitat and hibernating ponds. (Gregory and Campbell 1984; Cannings et al 1999).

Threats: Loss of habitat due to urban and agricultural development. The turtles may be affected when there is obstruction of movement to the nesting sites because of roads, and by the level of exploitation through the pet trade (Storm and Leonard 1995).

Distribution: Suitable habitat exists at low elevations in the Columbia River Drainage (T. Antifeau, pers. Comm.).

Birds

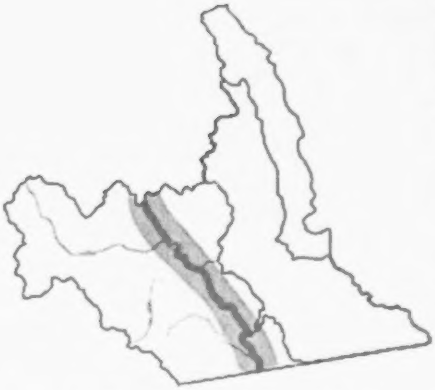
American Bittern (*Botaurus lentiginosus*) – Blue List

- Identified Wildlife Species

Habitat: American Bittern depend on wet habitat with dense growth of tall emerging vegetation such as marshes, swamps, and shallow lakes (Fraser et al. 1999). Nests are usually built among the vegetation emerging from water up to 36 cm deep (Campbell et al. 1990a).

Threats: Loss of habitat due to urban and agricultural development that may alter, pollute (agricultural pesticides), or destroy wetlands.

Distribution: Breeding sites were recorded in the Creston area but not from the Cranbrook Forest District. (Campbell et al. 1990a).



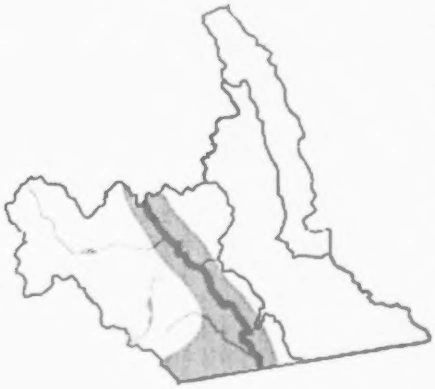
No breeding records from the Cranbrook Forest District

Great Blue Heron (*Ardea herodia herodias*) – Blue List

Habitat: Great Blue Herons nest in groups (heronries) in stands of larger trees of many species, although black cottonwood is favoured in the Kootenay region (Forbes et al. 1985, and Gebauer 1995 in Machmer 1996). Heronries usually are located near foraging habitat, or slow-moving rivers, sloughs, and marshy lakes.

Threats: Loss of nesting habitat in mature stands due to forest harvesting, and habitat contamination that may affect breeding success. Great Blue Heron are sensitive to disturbance near the heronry immediately prior to or during nesting.

Distribution: Great Blue Heron are absent from high mountain areas and dry deserts, and are known to breed in the west Kootenay (BCMELP 1998a).

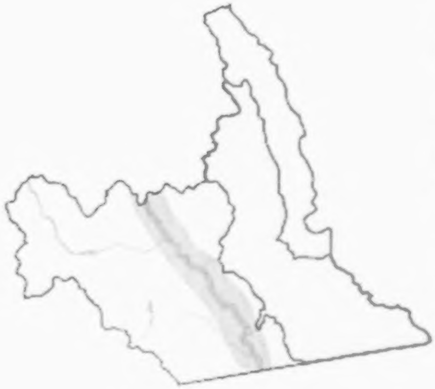


Swainson's Hawk (*Buteo swainsoni*) – Red List

Habitat: Swainson's Hawk are found in open areas such as grasslands, open woodlands, farmlands, wetlands, and alpine meadows. Nesting occurs in upland areas of foothills and valleys.

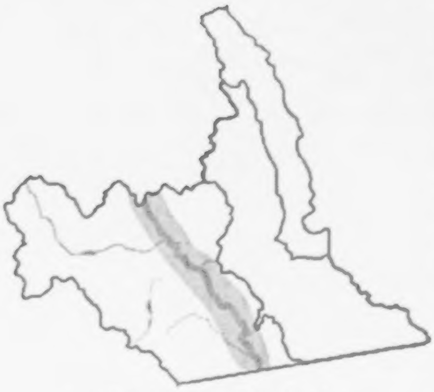
Threats: Loss of habitat due to urban and agricultural development, and to forest encroachment in grasslands (because of fire suppression). Winter and foraging site contamination by pesticides (Fraser et al. 1999).

Distribution: There are no breeding records for the Cranbrook Forest District, but the species uses the alpine meadows of the Kootenay River Drainage during migration (Campbell et al. 1990b).



Migration corridor

Peregrine Falcon (*Falco peregrinus anatum*) – Red List



Possible breeding distribution.

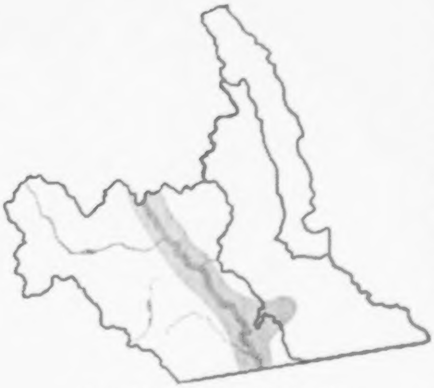
Habitat: Peregrine Falcon use various habitat that support populations of prey such as shorebirds, waterfowl, and other medium size birds. Nests are built on cliff ledges and sometimes on tall buildings in cities.

Threats: Foraging habitat (wetlands) may be lost due to urban and agricultural development. Nesting sites may be abandoned because of disturbance through recreational activities in cliff areas. One of the main causes of population decline in North America is due to fragmentation of thin egg shells caused by contamination with pesticides such as DDT and DDE (Fraser et al. 1999).

Distribution: Peregrine Falcon are very rare in Interior BC. The species is not known to breed in the Cranbrook Forest District (Campbell et al. 1990b).

Prairie Falcon (*Falco mexicanus*) – Red List

- Identified Wildlife Species



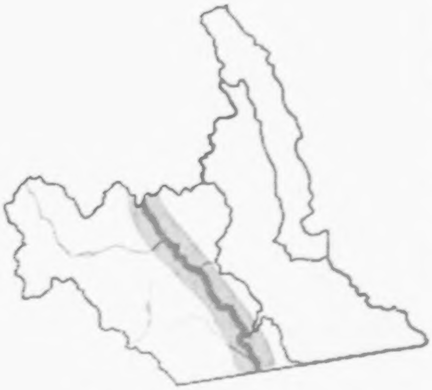
Possible breeding distribution

Habitat: Prairie Falcon typically breed in steep escarpments and rocky cliffs associated with large, dry grasslands or sagebrush steppes (Hooper 1997). The species spends the winter south to Mexico, and returns to BC for breeding season.

Threats: Loss of foraging habitat due to forests encroachment and conversion of grassland to agricultural fields. Prairie Falcon are sensitive to disturbance during nesting and may be affected by activities in hill sides. Reproduction rate is affected by fragmentation of thin egg shells caused by contamination with pesticides such as DDT and DDE.

Distribution: In British Columbia, Prairie Falcon are at the northern limit of their range. Nest sites were not recorded from the Cranbrook Forest District (Fraser et al. 1999; Hooper 1997).

Sharp-tailed Grouse (*Tympanuchus phasianellus columbainus*) – Blue List



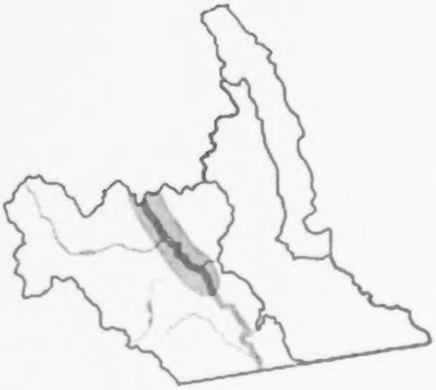
Possible breeding distribution

Habitat: Sharp-tailed Grouse are ground nesters found in open lowlands with grasslands and shrub-steppes vegetation types. They seek cover in adjacent riparian and deciduous woodlands during winter.

Threats: Loss of grasslands and riparian woodland due to urban and agricultural development.

Distribution: Population of Sharp-tailed Grouse remains low to moderate in the east Kootenay region (Campbell et al. 1990b).

Sandhill Crane (*Grus canadensis*) – Blue List
- Identified Wildlife Species

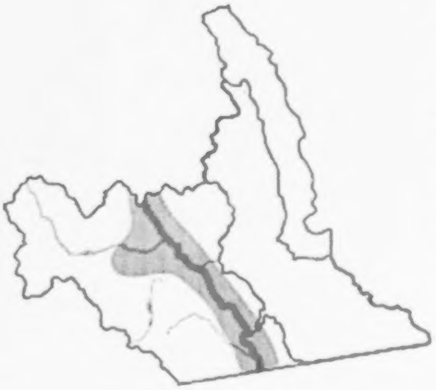


Habitat: Sandhill Crane are found in wet sites with shallow water such as marshes, edges of lakes, swamps, meadows, ponds, and flooded agricultural fields. Selected sites are usually located in landscapes that isolate them from surrounding disturbance.

Threats: Urban and agricultural development may alter, pollute (agricultural pesticides), or destroy wetlands. Sandhill Crane are highly sensitive to disturbance. Activities such as tree removal or grazing around nesting sites may affect the population.

Distribution: Breeding distribution includes the east Kootenay Trench with 1 or 2 breeding pairs (Cooper 1996).

Long-billed Curlew (*Numenius americanus*) – Blue List
- Identified Wildlife Species

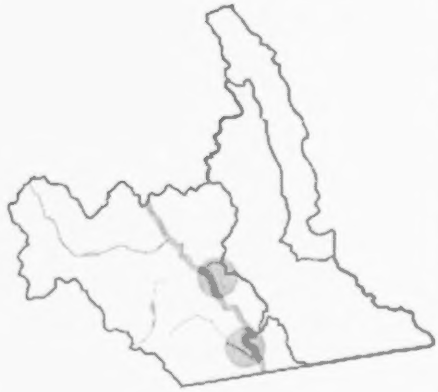


Habitat: Long-billed Curlew is a shorebird that migrates to the southern portion of Interior British Columbia, at spring. The species builds nests in depressions on ground, usually in open dry grasslands with short vegetation (< 25 cm tall), and below 1200 m elevation (BCMELP 1998b; Fraser et al. 1999).

Threats: Loss of grasslands due to urban and agricultural encroachment. Habitat alteration because of overgrazing by livestock.

Distribution: Long-billed Curlew were recorded breeding in the Kootenay River Drainage (Fraser et al. 1999; T. Antifeau, pers. comm.).

Flammulated Owl (*Otus flammeolus*) – Blue List



Habitat: Flammulated Owl occur throughout montane forests, in mature/old stands, with open understory (Groves et al. 1997). In British Columbia, Flammulated Owl are found primarily in the Interior Douglas-fir biogeoclimatic zone where they nest in dead and dying trees with old cavities excavated by woodpeckers (Fraser et al. 1999).

Threats: Loss of habitat due timber harvest in Ponderosa Pine and Douglas-fir forests. Habitat degradation due to fire suppression. Snag removal because of firewood cutting, and safety measures related to forest activities (Groves et al. 1999; Fraser et al. 1999).

Distribution: Flammulated Owl are rare in the Cranbrook Forest District, but were recorded at low elevations in the Kootenay River Drainage. (T. Antifeau, pers. comm.).

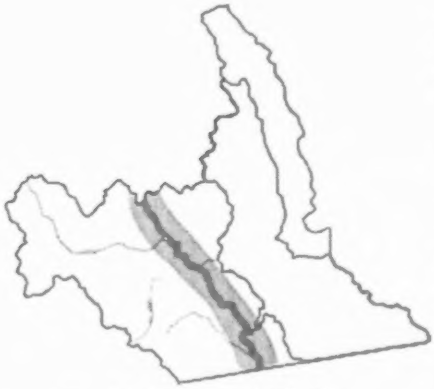
Not known from the Cranbrook Forest District

Western Screech-owl (*Otus kennicottii macfarlanei*) – Red List

Habitat: Western Screech-owl (sub-species *macfarlanei*) occur in low-elevation, deciduous, riparian forests dominated by cottonwood or birch trees. Nest trees are usually large (>25 cm dbh), older, dead or dying trees, with natural cavities (Campbell al. 1990b).

Threats: Loss of habitat due to urban and agricultural development, and forest practices. Conservation of habitat for Western Screech-owl may be complicated because most of these owls are located on private land (Hobbs 2002).

Distribution: Western Screech-owl (sub-species *macfarlanei*) are very rare in the Kootenay (Campbell et al. 1990b). The species is not known from the Cranbrook Forest District (T. Antifeau, pers. Comm.).



Possible breeding distribution

Short-eared Owl (*Asio flammeus*) – Blue List

Habitat: Short-eared Owl are associated with open spaces such as grasslands, brushy fields, marshlands, alpine meadows, and forest clearings. Small mammals are the main food source. Nesting and roosting occur on the ground (BCMELP, 1998c).

Threats: Loss of habitat due to urban and agricultural development. Short-eared owl are very sensitive to human disturbance.

Distribution: Suitable habitat is found in the Kootenay River Drainage. Although it was sighted, there are no breeding records for the District (Campbell et al. 1990b).

No breeding records from the Cranbrook Forest District

White-throated Swift (*Aeronautes saxatalis*) – Blue List

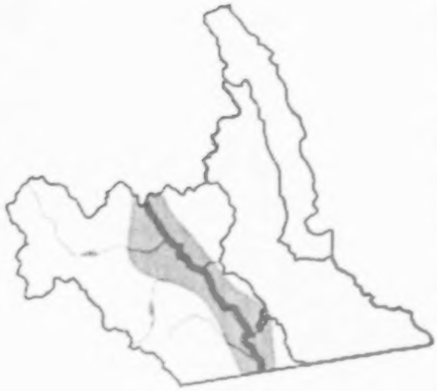
Habitat: White-throated Swift are associated with cliffs and canyons. Nests are built in cracks and crevices of steep rocky cliff faces. Aerial foraging on invertebrates takes place close to nesting cliffs.

Threats: Little threat is known to their nesting habitat, but nests may be affected by disturbance from human activities in rock cliffs and canyons (e.g. rock-climbing and housing development).

Distribution: White-throated Swift are known to breed mostly in the Okanagan and the Similkameen River valleys. Breeding distribution includes Canal Flat area, just north of the Cranbrook Forest District (Fraser et al. 1999).

Lewis's Woodpecker (*Melanerpes lewis*) – Blue List

- Identified Wildlife Species

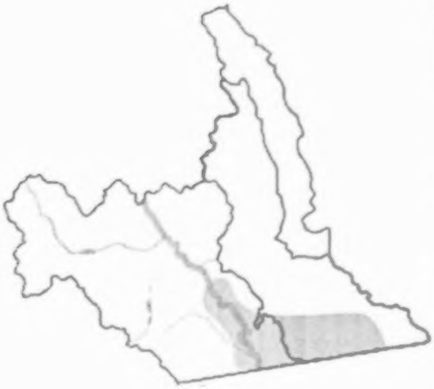


Habitat: Lewis's Woodpecker occurs in forests with very open canopy, large standing dead or dying trees, and shrubby understory. In the east Kootenay Trench, nests were found in open mature Ponderosa Pine forest, grassland with veteran Ponderosa Pines, riparian cottonwood, but mostly in Ponderosa Pine and Douglas-fir forests that were burned (Cooper and Gillies 2000).

Threats: Loss of habitat due to fire suppression and timber harvest. Removal of nest trees because of firewood cutting.

Distribution: Lewis's Woodpecker were recorded from the Kootenay River Drainage

Williamson's Sapsucker (*Sphyrapicus thyroideus nataliae*) – Red List



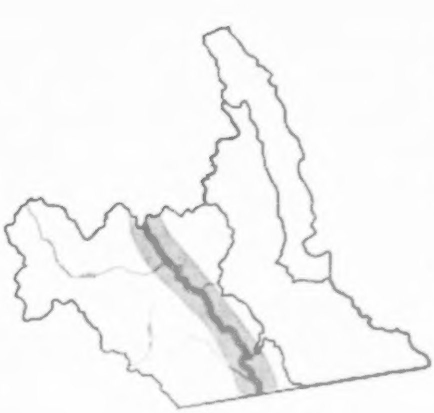
Habitat: Williamson's Sapsucker occurs in Western Larch, Douglas-fir and Ponderosa Pine forest. Nests are built in cavities excavated in large (>30 cm dbh) live or dead coniferous trees (Steeger et al. 1996).

Threats: Loss of habitat due to forest harvest, especially removal of older Western Larch trees (Gyug and Peatt 2000). Low population numbers also make the species vulnerable (Steeger et al. 1996).

Distribution: Williamson's Sapsucker occur only in southern Interior British Columbia. The sub-species *nataliae* is very rare, but was sighted in the Flathead area (Fraser et al. 1999).

Bobolink (*Dolichonyx oryzivorus*) – Blue List

- Identified Wildlife Species



Habitat: Bobolink is a spring migrant and a summer visitant of BC (Campbell et al. 2001). Nests are built on ground, in open and grassy areas such as hayfields, meadows, and fields with tall grass.

Threats: Loss of habitat due to urban development and agricultural activities (haying practices, conversion of grass fields to alfalfa crop, contamination due to insecticides).

Distribution: Bobolink are restricted to the southern and central portion of the province. Breeding range includes the Kootenay River Drainage (T. Antifeau, pers. comm.)

Mammals

Northern Long-eared Myotis (*Myotis septentrionalis*) – Blue List

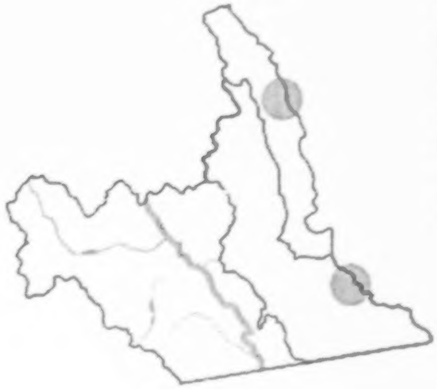
Not known from the Cranbrook Forest District

Habitat: Northern Long-eared Myotis are generally associated with boreal forests. Roosting sites include buildings, trees, caves and mines. These bats are gleaners and take insects from branches and foliage under the tree canopy (Nargosen and Brigham, 1993).

Threats : Loss of roosting sites due to timber harvest. Northern Long-eared Myotis are sensitive to disturbance at hibernacula.

Distribution: There are no records for the Northern Long-eared Myotis in the Cranbrook Forest District (T. Antifeau, pers. comm.).

Least Chipmunk (*Tamias minimus orecetes*) – Blue List

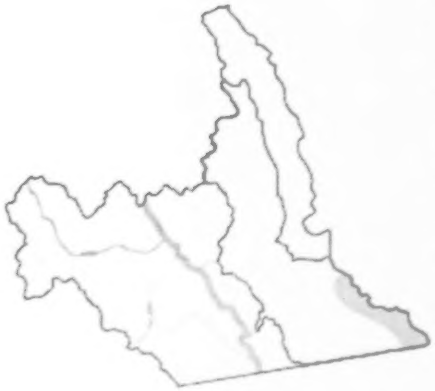


Habitat: Least Chipmunk are omnivorous animals, found in subalpine and alpine zones (Fraker et al. 1997).

Threats: There are no apparent threats because range is at high elevation. However, habitat may be lost due to development and natural resource extraction in areas at high elevation.

Distribution: Least Chipmunk (sub-species *orecetes*) were recorded from Akamina Pass, and Elkford area (Nargosen and Fraker 2002).

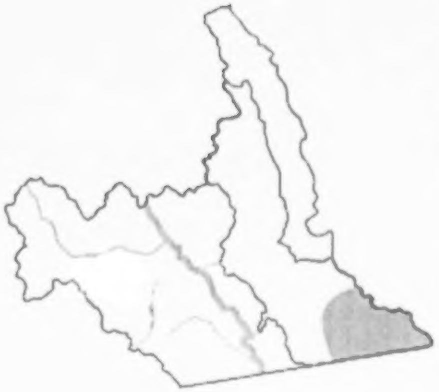
Red-tailed Chipmunk (*Tamias rufucaudus ruficaudus*) – Red List



Habitat: Red-tailed Chipmunk occur in various conifer forest habitats, but are most abundant near forest openings where shrubs are abundant (Fraker et al. 1997). Trees and shrubs provide seeds and fruits, and are used for nesting.

Threats: There are no apparent threats because range is at high elevation. However, habitat may be loss due to development and natural resource extraction in areas at high elevation.

Distribution: Red-tailed Chipmunk (sub-species *ruficaudus*) are known only from the southeast corner of the Cranbrook Forest District (Nargosen and Fraker 2002).



Southern Red-backed Vole (*Clethrionomys gapperi galei*) – Blue List

Habitat: Southern Red-backed Vole are found in cool, moist forests and prefers areas with large amounts of ground cover. They are known to be associates of older forests, but use second growth stands (Fraker et al. and Kerr 1997). They feed on vegetation, fungi and insects, and nest in forest structural features such as downed wood, stumps and roosts (Cannings et al 1999).

Threats: Loss of moist forest habitat due to timber harvest.

Distribution: In British Columbia, Southern Red-backed Vole (subspecies *galei*) was recorded only from the southeast corner of the Cranbrook Forest District, (T. Antifeau, pers. comm.; Cannings et al. 1999).

Grizzly Bear (*Ursus arctos*) – Blue List

- Identified Wildlife Species

Habitat: Grizzly Bear use a wide range of habitat throughout the year. Habitat includes avalanche chutes, lower elevation valleys and riparian zones, forests with open and close canopy, naturally burned stands, and sometimes regenerating cutblocks (McLellan and Hovey 2001).

Threats: Grizzly Bear are sensitive to human encroachment and potential conflicts with forestry (Nams et al. 2001). Grizzlies have been restricted to mountainous terrain because of severe alteration of land and excessive mortality at lower elevations. Direct killing by humans is the major mortality factor for grizzlies (McLellan and Hovey, 2001).

Distribution: Grizzly Bear occur throughout The Cranbrook Forest District.

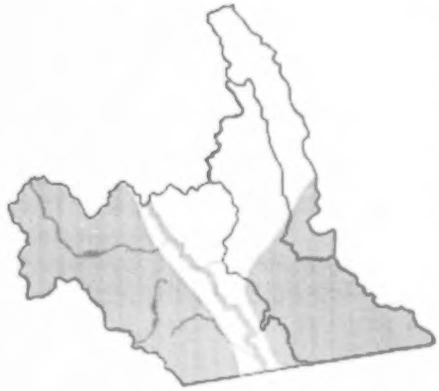
Fisher (*Martes pennanti*) – Blue List

- Identified Wildlife Species

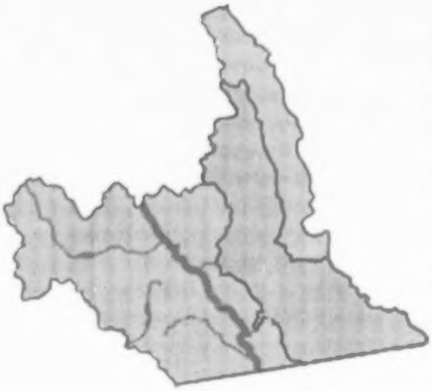
Habitat: Fisher are found in dense, late-seral coniferous or mixed wood habitats. They use a diversity of forest types when foraging, and large-diameter trees with cavities, especially riparian spruce or cottonwoods, as den sites.

Threats: Removal of larger diameter trees, particularly from riparian sites – both streams and wetlands. Over-trapping and hydroelectric development.

Distribution: Fisher may currently occupy the southeast corner of the province in low densities, and at high elevation. Historical range includes the west and southeast portions of the Cranbrook Forest district (BCMOF 1997).



Historical range

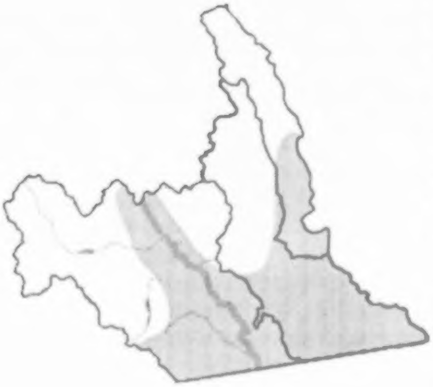


Wolverine (*Gulo gulo luscus*) – Blue List

Habitat: In the Kootenays, Wolverine are found near tree line and in tundra habitats where they feed on Caribou and Ground Squirrel (Krebs et al., 1993). Denning sites are predominantly in sub-alpine areas, and in large boulder talus slopes (Cannings et al., 1999).

Threats: Wolverine are very sensitive to human disturbance, especially during breeding season. They are vulnerable to habitat alteration and fragmentation due to roads.

Distribution: Wolverine occur throughout the Cranbrook Forest District.

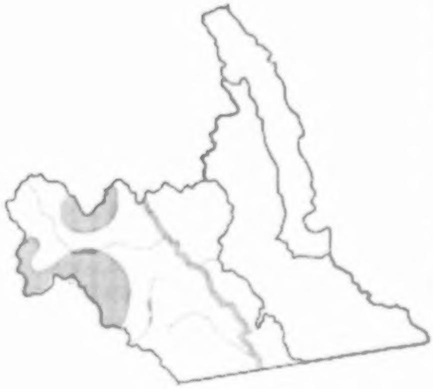


Badger (*Taxidea taxus*) – Red List

Habitat: Badger are burrowing carnivores that are abundant in non-forested habitats and in open Douglas-fir forests. Their distribution was strongly correlated with abundance of Ground Squirrel holes (Newhouse 1997).

Threats: Badger are sensitive to human disturbance and require large home ranges. They are vulnerable to human encroachment causing loss of habitat and prey, and mortality from road kills and landowners.

Distribution: Badger occur in the southern half of the Cranbrook Forest district, in the Kootenay River Drainage and in the Elk Valley.

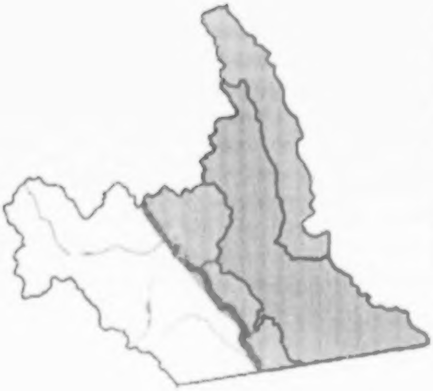


Mountain Caribou (*Rangifer tarandus*) – Red List

Habitat: Mountain Caribou require large home ranges that maintain various seasonal habitats and connectivity between these habitats (McLellan 1995). Winter sites occur in older forests with high canopy cover, and in subalpine forest with abundant arboreal lichen during late winter. Summer and breeding time take place at higher elevation sites in the ESSF or in the alpine tundra, to avoid predators (Bergerud 1985).

Threats: Loss of old forest habitat and food supply (arboreal lichens) due to forest harvesting. Further fragmentation and isolation of remaining late-seral winter habitat. Caribou are sensitive to disturbance and may be affected by human recreational activities (snow machine use, heli-skiing).

Distribution: Caribou occur in low numbers in the South Purcell Mountains (Kinley 2001).



Bighorn Sheep (*Ovis canadensis canadensis*) – Blue List

- Identified Wildlife Species

Habitat: Bighorn Sheep spend the summer in treeless open areas of the alpine tundra, and above 2000 m elevation (Cannings et al. 1999). Foraging sites must provide cliffs or very steep terrain to allow escape from predators (Wilson and Ruff 1999). The sheep move to lower elevation during winter, where foraging occurs on south-facing grasslands, with steep slopes and lighter snowfalls.

Threats : Loss of grassland habitat due to fire suppression and forest encroachment. Bighorn Sheep are also vulnerable to livestock grazing and loss of connectivity between seasonal ranges.

Distribution: Bighorn Sheep occur throughout the east portion of the Cranbrook Forest District (Cannings et al. 1999).

VASCULAR PLANTS

Table 1. **Rare vascular plants of the Cranbrook Forest District. Listing in the district: Red (threatened/ endangered) or Blue (vulnerable), habitat and known distribution.**

Species found in the Alpine Zone

Scientific Name	Common Name	Listing	Habitat	Distribution	Source
Arabis lemonii var. drepanoloba	Lemmon's Rockcress	B	Dry fields, scree and talus in alpine zone	Infrequent in c and s Bc, YT, AB s to UT and NV.	Kershaw et al. (2001) Douglas et al. (1989) Douglas et al. (1998b)
Besseya wyomingensis	Wyoming Kitten-tails	B	Dry open slopes in the alpine zone.	Rare in se BC, s to CO	Kershaw et al. (1998) Douglas et al. (1991)
Bupleurum americanum	American Through-wax	B	Dry open sites	Rare in s BC, known only from Kootenay Pass, n to AK, s to WY	Kershaw et al. (1998) Douglas et al. (1989)
Carex incurviformis var incurviformis	Curve-spiked Sedge	B	Mesic to dry meadows in upper alpine zone	Rare in se BC AK, YT, MT, ID	Douglas et al. (2001a)
Carex rupestris spp drummondiana	Drummond's Sedge	B	Dry rocky slopes, scree slopes and meadows in the alpine zone.	Rare in se BC, s to UT, NM and SD	Douglas et al. (2001a)
Draba densifolia	Nuttall's Draba	B	Alpine gravel and scree slopes elsewhere on turfy tundra and in cold ravines and subalpine fir forests.	Rare in sc BC and AB Waterton area. s to WY, VT and CA.	Kershaw et al. (2001) Douglas et al. (1989)
Erigeron ochroleucus var scribneri	Buff Daisy	B	Gravelly slopes in Dryas dominated tundra; elsewhere, in exposed mountain sites on limestone and dolmite rock. Alpine	Waterton area. No collections to date in BC (1989)	Kershaw et al. (2001) Douglas et al. (1989)
Erigeron trifidus	Three-lobed Daisy	B	Alpine slopes	Frequent locally in se BC, e to w AB	Kershaw et al. (2001) Douglas et al. (1989)
Minuartia elegans	Northern Sandwort	B	Moist gravelly alpine slopes, elsewhere, on dry, turfy, gravelly or sandy calcareous barrens	Rare in ne BC, n to AK, YT, NT e to w AB.	Kershaw et al. (2001) Douglas et al. (1989)
Papaver pygmaeum	Dwarf Poppy	B	Rocky slopes in alpine	Rare in se BC, e to AB, s to nw MT.	Kershaw et al. (1998)
Pellaea gastonyi	Gastony's Cliff Brake	B	Dry to mesic sites in rocky alpine zone	Rare in BC.	Douglas et al. (1991)
Phacelia lyallii	Lyall's Phacelia	B	High rocky slopes	Rare in Extreme se BC, AB and ID, MT	Kershaw et al. (1998) Douglas et al. (1990)
Polemonium elegans	Elegant Jacob's-ladder	B	Dry cliffs and scree slopes in the alpine zones	Rare in the Cascades and coast, n CA.	Douglas et al. (1990)

Species found in the Subalpine Zone

Scientific Name	Common Name	Listing	Habitat	Distribution	Source
Salix boothii	Booth's Willow	B	Streamsides and meadows in the subalpine zones	Rare in sc BC, e to AB, s to CA and CO	Douglas et al. (1991)

Species found in the Subalpine to Alpine Zone

Scientific Name	Common Name	Listing	Habitat	Distribution	Source
Androsace chamaejasme spp. lehmanniana	Sweet-flowered Fairy-candelabra	B	Rocky open slopes subalpine to alpine	Rare, scattered throughout BC east of Cascades, n to NT, e to NS to MO, OH, NJ, NH.	Kershaw et al. (1998) Douglas et al. (1991)
Astragalus vexilliflexus var. vexilliflexus	Bent-flowered Milk-vetch	B	Dry sree, grass knolls in subalpine and alpine	se BC McLatchie, Flathead and Fording River areas	Kershaw et al. (2001) Kershaw et al. (1998) Douglas et al. (1990)
Carex lenticularis var. lenticularis	Lake shore Sedge	R	Marshes and wet meadows in the lowland zone, streamsides and ponds in the subalpine and alpine zones, and bogs and wet sites in all but the alpine zone.	NT to NF, eastern states	Douglas et al. (2001a)
Carex paysonis	Paysons' Sedge	B	Moist meadows and rocky slopes in the subalpine and alpine zones.	Rare in se BC, s to UT, NV and e OR	Douglas et al. (2001a)
Minuartia austromontana	Rocky Mountain Sandwort	B	Dry slopes subalpine to alpine	Rare in extreme se BC, e to AB, s to WY, UT and NE OR.	Kershaw et al. (1998) Kershaw et al. (2001) Douglas et al. (1989)
Senecio conterminus	High Alpine Butterweed	B	Rocky slopes subalpine to alpine	Locally frequent in extreme se BC, e to AB, s to MT.	Kershaw et al. (1998) Douglas et al. (1989)
Senecio megacephalus	Large-headed Groundsel	B	Rocky alpine and subalpine slopes	Few localities near Waterton, infrequent in se BC, e to AB, s to ID and MT.	Kershaw et al. (2001) Douglas et al. (1989)

Species found in the Montane to Alpine Zone

Scientific Name	Common Name	Listing	Habitat	Distribution	Source
Carex geyeri	Geyer's Sedge	B	Dry meadows and open forest in the montane to alpine zones	Rare in se BC, s to UT, NV and CA.	Douglas et al. (2001a)
Claytonia megarhiza var. megarhiza	Alpine Springbeauty	B	Rocky sites in upper montane to alpine in BC	Rare in se BC, known only from Goat Mountain, e to AB, s to CO, UT, NM	Kershaw et al. (1998) Douglas et al. (1990)
Epilobium leptocarpum	Small Flowered Willowherb	B	Moist open stoney slopes montane to alpine	Rare throughout BC, n to AK, s to MT, ID and OR	Kershaw et al. (2001) Douglas et al. (1990)
Gentiana affinis	Prairie Gentian	B	Grows on moist open sites in foothills, montane and alpine	Rare in se BC, s to AZ, CA, NM	Kershaw et al. (1998) Douglas et al. (1990)
Gentiana calycosa	Mountain Bog Gentian	B	Wet to moist open sites montane to alpine	Rare in se BC, s to ID,MT	Kershaw et al. (1998) Douglas et al. (1990)
Lewisia triphylla	Three-leafed Lewisia	B	Moist, sandy, snowbed sites from the montane to alpine zone.	Rare in se BC, s to MT, CO, CA	Douglas et al. (1990)

Scientific Name	Common Name	Listing	Habitat	Distribution	Source
Plantago canescens	Arctic Plantain	B	Grassy and gravelly slopes. on non-alkline soils; elsewhere, on steep open slopes, riverbanks, eskers and scree slopes. Montane to sub alpine	Rare in se BC, AB, n to AK, YT.	Kershaw et al. (2001) Douglas et al. (1990)
Townsendia parryi	Parry's Townsendia	R	Rocky slopes in montane, sub alpine and alpine zones	Rare, known from several locations in se BC. e to AB s to CO and OR.	Kershaw et al. (1998) Douglas et al. (1989)

Species found in the Montane to Subalpine Zone

Scientific Name	Common Name	Listing	Habitat	Distribution	Source
Epilobium saximontanum	Rocky Mountain Willowherb	B	Moist montane slopes and subalpine meadows and on stream banks. known only from Crowsnest Pass.	AB, s to e OR, CA, NM e to PQ, NF	Kershaw et al. (1998) Douglas et al. (1990)
Eriogonum androsaceum	Androsace Buckwheat	B	Dry open sites in the montane to subalpine zones	Rare in sc and se BC. e to AB s to n MT.	Douglas et al. (1990)
Lomatium sandbergii	Sandberg's Desert Parsley	B	Dry sites in upper montane and subalpine zones.	Rare in extreme se BC. e to AB s to MT and ID.	Douglas et al. (1989)
Melica specabilis	Purple Oniongrass	B	Wet to dry meadows and open forests in the montane subalpine zones.	Rare in BC more common in western states	Douglas et al. (2001b)
Potentilla diversifolia var. perdissecta	Diverse-leafed Cinquefoil	B	Mesic meadows and rock outcrops in the montane to subalpine zones	Rare in sc and se BC	Kershaw et al. (1998) Douglas et al. (1991) Douglas et al. (1999b)
Potentilla nivea var. pentaphylla	Five-leafed Cinquefoil	B	Mesic meadows and rock outcrops in the montane to subalpine zones.	Rare in s BC east of the Cascades	Kershaw et al. (1998) Douglas et al. (1991) Douglas et al. (1999b)
Potentilla ovina var ovina	Sheep Cinquefoil	B	Moist open areas in the montane to subalpine zones.	Rare in extreme sc and se BC. e to SK, s to CO, NM, CA	Douglas et al. (1991) Douglas et al. (1999b)
Valeriana edulis ssp. edulis	Edible Valerian	B	It grows in moist to slightly dry sites in montane to sub alpine zones.	Rare in sc and e BC. s to Mexico	Kershaw et al. (1998) Douglas et al. (1991)

Species found in the Montane Zone

Scientific Name	Common Name	Listing	Habitat	Distribution	Source
Agastache foeniculum	Giant Hyssop	R	Meadows and thickets in the montane zone	Rare in centeral and e BC, e to ON, s to CO	Kershaw et al. (1998) Douglas et al. (1990)
Anemone canadensis	Canada Anemone	B	Moist meadows and forest openings in montane zone	Rare, scattered throughout BC east of Cascades, n to NT e to Ns s to MO, OH, NJ, NH.	Douglas et al. (1991)
Astragalus drummondii	Drummonds Milk-vetch	B	Dry open grassy slopes in montane	Rare in se BC, Known only from Natal Ridge, s to KS, UT NM	Douglas et al. (1990) Douglas et al. (1999a)
Botrychium crenulatum	Dainty Moonwort	B	They grow in mountain meadows, grassy areas and moist parkland.	Rare in ne and se BC. Known in Flathead River, s to WY AZ CA	Vitt et al. (1998) Douglas et al. (2000)

Scientific Name	Common Name	Listing	Habitat	Distribution	Source
Botrychium simplex	Least Moonwort	B	No information found on this species.	There are 13 species of this genus that occur in northwestern North America	Vitt et al. (1998) Douglas et al. (2000)
Brickellia grandiflora	Large-flowered Brickellia	R	Eroded slopes and rocky banks. Montane	Rare in se BC known only from Flathead Valley.	Kershaw et al. (2001) Douglas et al. (1994)
Castilleja cusickii	Cusick's Paintbrush	R	Grasslands and meadows in montane zone	Infrequent in sc and se BC. e to sw AB, s to WY, ID, NV	Kershaw et al. (2001) Douglas et al. (1991)
Cirsium scariosum	Elk Thistle	B	Moist woodland, often on disturbed sites, elsewhere on rocky sites and clearings in forests in montane zone.	Rare in se BC e to AB, ID and MT	Kershaw et al. (2001) Kershaw et al. (1998) Douglas et al. (1989)
Eriogonum pauciflorum var. pauciflorum	Few-flowered Buckwheat	R	Dry rocky open slopes in montane	Rare in se BC e to SK, s to SD, MT, WY, NV. Known only from south Kootenay Pass.	Kershaw et al. (2001) Douglas et al. (1990) Douglas et al. (1999b)
Gayophytum humile	Dwarf Groundsmoke	B	Dry sandy open areas in the montane zone.	Rare in sc BC, known only at Manning Park.	Douglas et al. (1990)
Impatiens ecalcarata	Spurless Touch-me-not	B	Moist forests in the montane zone.	Rare in BC, s to MT and n OR.	Douglas et al. (1989)
Lupinus arbustus ssp. pseudoparviflorus	Montana Lupine	R	Moist sites in the montane zone.	Rare in extreme se BC, s to MT and CA	Douglas et al. (1990)
Prenanthes sagittata	Arrow-leafed Rattlesnake Root	R	Moist often shady sites	Extreme sw AB Waterton area. Not on BC list.	Kershaw et al. (2001) Douglas et al. (1989)
Senecio hydrophiliodes	Sweet-marsh Butterweed	R	Swamps, often alkaline sites in montane zone.	Rare in se BC Only known at Kootenay River near US border. s to WA and CO.	Douglas et al. (1989)

Species found in the Montane and Steppe Zones

Scientific Name	Common Name	Listing	Habitat	Distribution	Source
Apocynum x floribundum	Western Dogbane	B	Mesic to dry roadsides in steppe and montane	Rare in s BC East of the Cascades. s to VA, TN, NM, TX	Douglas et al. (1998a)
Astragalus crassicarpus	Ground Plum	B	Dry sites in steppe vegetation and montane zones.	Rare in se BC. Known only in Crowsnest Pass area. s to TX, MT AZ and NM	Douglas et al. (1990)
Astragalus microcystis	Least Bladder Milk-vetch	R	Dry sites in steppe vegetation and lower montane zones.	Known only from a few collections in extreme se BC. s to ID, MT, WA	Douglas et al. (1990)
Carex xerantica	Dry land Sedge	B	Dry slopes and open forests in the steppe and montane zones.	Rare in BC e to MB, s to MT and NB	Douglas et al. (2001a)
Gayophytum racemosum	Racemed Groundsmoke	R	Dry grasslands and forests in the steppe and lower montane zone	Rare in se BC Known at Marysville, s to CO, MT	Kershaw et al. (2001) Douglas et al. (1990) Douglas et al. (1999a)
Gayophytum ramosissimum	Hairstem Groundsmoke	R	Dry open places in the steppe vegetation and lower montane zone.	Rare in s BC. East of the Cascades. s to CA, AB, ID MT and CO	Douglas et al. (1990)

Scientific Name	Common Name	Listing	Habitat	Distribution	Source
Glycyrrhiza lepidota	Wild Licorice	R	Rich well drained sites often on disturbed ground and along streams, steppe and lower montane.	Rare in extreme se BC, AB to NM	Kershaw et al. (1998) Douglas et al. (1990)
Hedeoma hispida	Rough Pennyroyal	R	Dry fields and grasslands in the steppe and montane zone.	Rare in se BC e to PQ, s to MT CO	Douglas et al. (1999a)
Juncus regelii	Regel's Rush	B	Wet streambanks and marshes in the steppe and montane zones	Rare in BC, s to WY, UT, NV and CA	Douglas et al. (2001a) Douglas et al. (1994)
Lathyrus bijugatus	Pinewood Peavine	R	Dry sites in the steppe vegetation and lower montane zone.	Rare, Known only from Elko, s to ID and e WA.	Douglas et al. (1990)
Lupinus arbustus ssp. neolaxiflorus	Spurred Lupine	R	Dry sites in the steppe vegetation and lower montane zone.	Rare in extreme se BC, s to MT and CA	Douglas et al. (1990)
Lupinus bingenensis var. subsaccatus (aka Lupinus sulphureus)	Sulpher Lupine	R	Dry sites in the steppe vegetation and lower montane zone.	Rare in sc BC, near Kamloops	Douglas et al. (1990)
Orobanche ludoviciana ssp. ludoviciana	Suskdorf's Broomrape	R	Parasite of Aster sp. Grows in grass, schrubs in steppe and montane.	Rare in se BC. Known only from Bull River. e to MB, s to IN, ND, NM	Douglas et al. (1999b)
Polygonum douglasii ssp austiniae	Austin's Knotweed	B	Dry sites in the steppe vegetation and lower montane zone.	Rare in se BC Known only from the South Kootenay Pass	Douglas et al. (1990)
Polygonum douglasii ssp. engelmannii	Engelmann's Knotweed	B	Moist to dry sites in the steppe vegetation and lower montane zone.	Rare in se BC, e to sw AB, s to WY and CO.	Douglas et al. (1990)
Scolochloa festucacea	Sprangle-top	R	Ponds, marshes, lakeshores and streamsides in the steppe and montane zones.	Rare in ec, sc and se BC. KS, MT, ID, OR.	Douglas et al. (2001b) Douglas et al. (1994)
Sphenopholis intermedia	Prairie Wedgegrass	R	Moist meadows and streambanks, shallow ponds and hot springs in the steppe and montane zones.	Rare in sc and se BC and western states.	Douglas et al. (2001b) Douglas et al. (1994)
Sphenopholis obtusata	Prairie Wedgegrass	R	Moist meadows and streambanks, shallow ponds and hot springs in the steppe and montane zones.	Rare in sc and se BC and western states.	Douglas et al. (2001b) Douglas et al. (1994)
Stellaria obtusa	Blunt-sepaled Starwort	B	Damp meadows, on lakeshores and streamsides. Steppe and montane	Rare e of Cascades in s BC. CO, CA, e to AB	Kershaw et al. (2001) Douglas et al. (1989)
Thermopsis rhombifloria var. rhombifloria	Prairie Golden Bean	R	Mesic sites in the steppe vegetation and lower montane zone.	Rare in se BC, e to MB, s to NB, ND and CO	Kershaw et al. (1998) Douglas et al. (1990) Douglas et al. (1999a)

Species found in the Steppe to Alpine Zone

Scientific Name	Common Name	Listing	Habitat	Distribution	Source
Allium validum	Swamp Onion	B	Moist meadows in the steppe to alpine zones.	Rare in se BC, s to ID, NV, CA	Douglas et al. (2001a)
Minuartia nuttallii ssp. nuttallii	Nuttall's Sandwort	B	Dry open sites in steppe to alpine zones.	Infrequent in s BC, e to AB, s to WY, UT and OR	Douglas et al. (1989)

Species found in the Steppe to Subalpine Zone

Scientific Name	Common Name	Listing	Habitat	Distribution	Source
Delphinium bicolour ssp. bicolor	Montana Larkspur	B	Dry open or woody slopes. Plains to subalpine Dry sites in steppe vegetation to sub alpine zones.	Rare in se BC. s to WY	Kershaw et al. (1998) Douglas et al. (1991)
Silene drummondii var. drummondii	Drummond's Campion	B	Dry sites in the steppe vegetation and subalpine zones	Rare at scattered locations throughout BC interior. e to MB, s to NE,CO AZ	Kershaw et al. (1998) Douglas et al. (1989)

Species found in the Steppe Zone

Scientific Name	Common Name	Listing	Habitat	Distribution	Source
Cryptantha ambigua	Obscure Cryptantha	R	Dry grasslands and scrubs in steppe zone.	Rare in sc and se BC s to CO NV CA	Douglas et al. (1998b)
Gaura coccinea	Scarlet Gaura	R	Dry sagebrush slopes in the steppe vegetation zone	Rare in BC east of the Cascades. s to Mexico and e to MB.	Douglas et al. (1990)
Linanthus septentrionalis	Northern Linanthus	B	Dry hillsides and plains; elsewhere, in forest openings and dry meadows steppe zone	Rare in sc and se BC, AB to CA Waterton Park area.	Kershaw et al. (2001) Douglas et al. (1990)
Orobanche corymbosa ssp. mutabilis	Flat-topped Broomrape	R	Parasitic mainly on Artemesia, on dry sites in the steppe vegetation zone.	Rare in sc BC, s to MT, WY, UT and ne CA.	Douglas et al. (1990)
Silene spaldingii	Spalding's Campion	R	Dry sites in the steppe vegetation zone	Rare in se BC, known only from Tobacco Plains, s to MT ID OR	Douglas et ai. (1998b)
Bouteloua gracilis	Blue Gamma	R	Dry grasslands in steppe zone	Rare in se and sc BC. Western states of USA	Douglas et al. (2001b) Douglas et al. (1994)

Species found in the Lowland to Montane Zone

Scientific Name	Common Name	Listing	Habitat	Distribution	Source
Artemisia ludoviciana var. incompta	Western Mugwort	B	Dry open sites plains to montane	BC, AB to New Mexico. Only known from Nelson, e to ON, IL, s to MX.	Kershaw et al (1998) Douglas et al. (1989)
Cheilanthes gracillima	Lace Fern	B	Dry rocks and rock crevaces in lowland, steppe and montane	Rare in extreme s BC, s to MT UT CO	Vitt et al. (1998) Douglas et al. (2000)
Elodea nuttallii	Nuttall's Waterweed	B	Lakes, ponds and streams in the lowland, steppe and montane zones.	Rare in BC, e to ON, MT, ND.	Douglas et al. (2001a)
Epipactis gigantea	Giant Helleborine	B	Moist streambanks, fens, marshes and swamps, and around hotsprings in the lowland and montane zones.	Rare in BC, s to TX, NM, AZ and CA	Douglas et al. (2001b)
Helenium autumnale var grandiflorum	Mountain Sneezeweed	B	Moist to mesic sites in the lowland, steppe vegetation and montane zones.	Rare in BC, n to NT, e to PQ, s to FL,TX, AZ	Douglas et al. (1989)
Helianthus nuttallii var nuttallii	Nuttall's Sunflower	R	Wet to moist sites in the lowland and steppe vegetation zones Moist meadow in foothills to montane.	Rare and widely scattered in BC. e to NF s to GA, NM.	Kershaw et al (1998) Douglas et al (1989)

Cheilanthes gracillima	Common Name	Listing	Habitat	Distribution	Source
Juncus confusus	Colorado Rush	R	Moist meadows and forest openings in the lowlands, steppe and montane zones.	Rare in BC e to NF, s throughout USA.	Douglas et al. (2001a) Douglas et al. (1994)
Lepidium densiflorum var. pubicarpum	Prairie Pepper-grass	R	Dry open slopes and disturbed ground plains to montane	Rare in BC s to NM.	Kershaw et al. (1998) Douglas et al. (1989)
Melica smithii	Smith's Melic	B	Moist forests in the lowlands and montane zones	Rare in BC Eastern Canada and mid west USA	Douglas et al. (2001b)
Physaria didymocarpa var. didymocarpa	Common Twinpod	B	Dry open sites in foothills to montane	BC s to WA. ID WY	Kershaw et al. (1998) Douglas et al. (1989)
Plantago eriopoda	Alkali Plantain	R	Open moist saline or alkiline in plains, foothills and montane	Rare in nw and se BC, AB, s to CO, CA, NM	Kershaw et al. (1998)
Sphaeralcea coccinea	Scarlet Globe-mallow	R	Dry open sites, plains to montane	Rare in sc and se BC to MX	Kershaw et al. (1998) Douglas et al. (1990)
Townsendia hookeri	Hooker's Townsendia	R	Dry open lopes foothills to montane	Rare, known from several locations in se BC, AB to CO, UT, CA	Kershaw et al. (1998) Douglas et al. (1989)
Veronica catenata	Pink Water Speedwell	R	Marshy, muddy or gravelly ground and shallow water, by ponds and streams and in ditches, elsewhere, by springs and spring fed streams. Lowland and montane	Rare in s BC. e to PQ. s to OH, OK, MO, NM CA.	Kershaw et al. (2001) Douglas et al. (1991)
Arnica chamissonis ssp incana	Meadow Arnica	B	Moist meadows from valley to sub-alpine	Rockies only seven specimens found in BC.	Kershaw et al. (1998) Douglas et al. (1989)
Hypericum scouleri ssp. nortoniae	Western St. John's-wort	B	Moist open slopes, foothills, all zones except alpine.	Common in se BC.	Kershaw et al. (1998) Douglas et al. (1990) Douglas et al. (1998b)

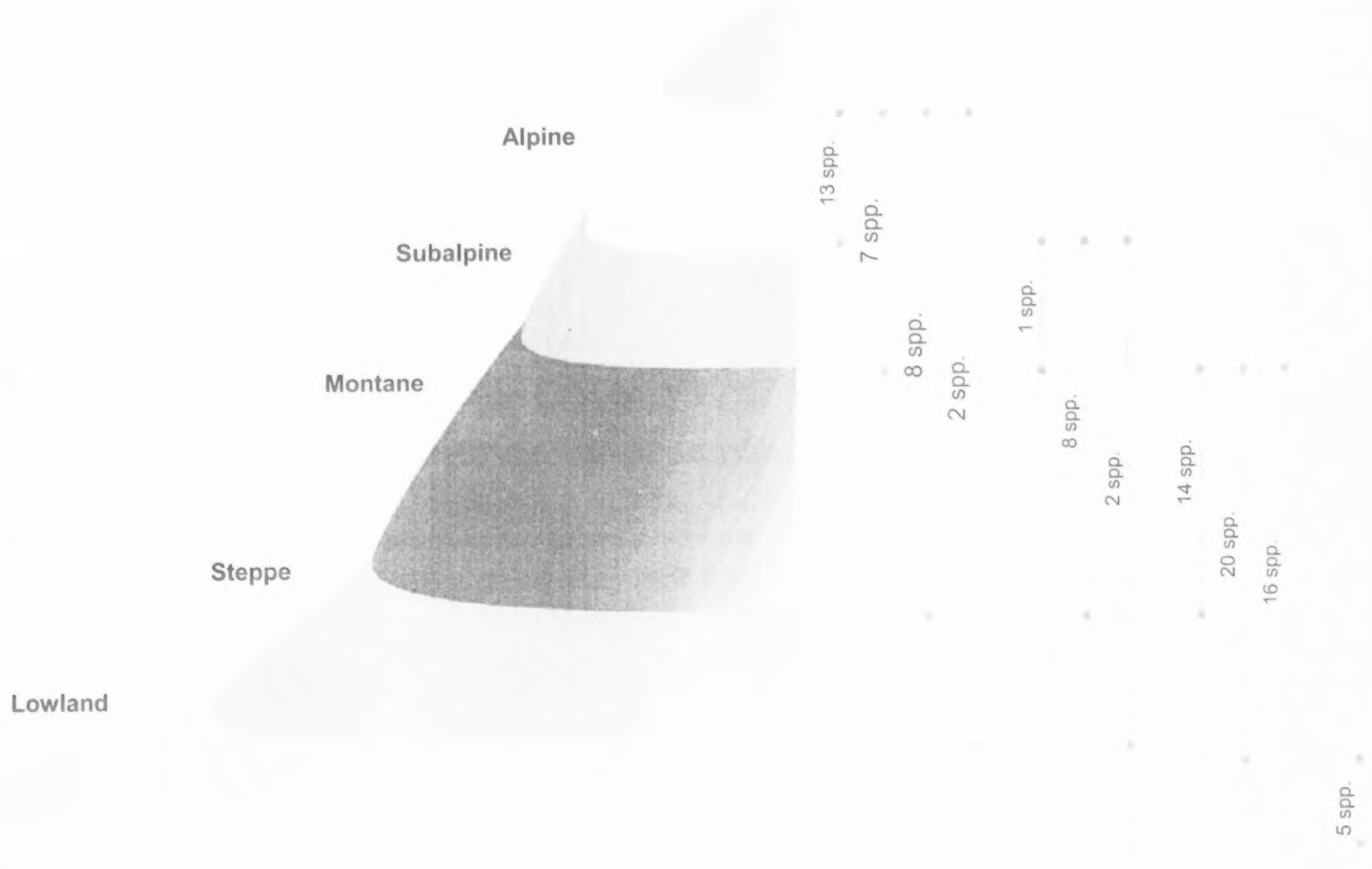
Species found in the Lowland Zone

Scientific Name	Common Name	Listing	Habitat	Distribution	Source
Atriplex argentea ssp argentea	Silver Orache	R	Saline flats and disturbed areas. Steppe and montane zone	Rare in sc and se BC. e to MB, s to NM	Douglas et al. (1989)
Epilobium pygmaeum (aka Boisduvalia glabella)	Smooth Spike-primrose	R	Moist sites in the steppe zone	Rare to extirpated in s BC east of Cascades, s to SD, NV. CA	Kershaw et al. (2001) Douglas et al. (1999a)
Penstemon nitidus var nitidus	Shining Penstemon	R	Grassy open slopes at low elevations in BC and AB	Rare in extreme se BC, AB, s to WY	Kershaw et al. (1998) Douglas et al. (1991)
Schizachyrium scoparium	Little Bluestem	R	Prairie grasslands and foothills, elsewhere, usually on calcareous soils. mesic to dry slopes in the steppe and lower montane zones	s AB, rare in BC s to ME, TX, AZ and CA everywhere south.	Kershaw et al. (2001) Douglas et al. (2001b)
Scutellaria angustifolia	Narrow-leafed Skullcap	B	Dry rocky areas on plains and foothills	Rare in s BC, known only from Trail, e to AB, s to MT and UT.	Kershaw et al. (1998) Douglas et al. (1990)

Species found in non defined vegetation zone

Scientific Name	Common Name	Listing	Habitat	Distribution	Source
Glyceria leptostachya	Slender-spike Manna Grass	B	Brackish tidal marshes, swamps, lakeshores, streamsides, and wet meadows in the lowland zones.	AK to CA. Rare in coastal BC.	Douglas et al. (2001b)
Isoetes howellii	Howell's Quillwort	R	Submerged aquatic plant growing in clear nutrient poor lakes and ponds	Limited in se BC near Waterton Park.	Kershaw et al. (2001) Douglas et al. (1991)

Rare vascular plants in the Cranbrook Forest District: distribution among vegetation zones


Alpine
Subalpine
Montane
Steppe
Lowland
13 spp.
7 spp.
8 spp.
2 spp.
1 spp.
8 spp.
2 spp.
14 spp.
20 spp.
16 spp.
5 spp.

Acknowledgments

Thanks to Ted Antifeau, Stewart Clow, Rob Neil, Gord McAdams, Steve Flett, Albert Chirico, and John Bell for providing the author with unpublished information and comments during reviews.

Literature Cited

BC Conservation Data Centre. 2002. Provincial and forest district lists of rare and endangered red and blue listed species and plant communities. http://srmwww.gov.bc.ca/cdc/tracking.htm.

BC Ministry of Environment, Lands and Parks. 1998a. British Columbia's wildlife at risk – the Great Blue Heron. Extension project No. MELP973771.998. Wildlife Branch, BC Ministry of Environment, Lands and Parks, Victoria, BC.

BC Ministry of Environment, Lands and Parks. 1998b. British Columbia's wildlife at risk – Long-billed Curlew *Numenius americanus*. Extension project No. MELP973772.998. Wildlife Branch, BC Ministry of Environment, Lands and Parks, Victoria, BC.

BC Ministry of Environment, Lands and Parks. 1998c. British Columbia's wildlife at risk – Short-eared Owl. Extension project No. MELP973774.998. Wildlife Branch, BC Ministry of Environment, Lands and Parks, Victoria, BC.

BC Ministry of Forest. 1997. Forest practices Code of British Columbia - Species and plant community accounts for identified wildlife – Volume I. BC Ministry of Forest, Victoria, BC.

Bergerud, A.T. 1985. Caribou declines in central British Columbia. Pp. 201-225 *In* Page, R. (ed.). Caribou Research and Management in British Columbia. Proceedings of a Workshop, Kamloops, BC, 6-7 November, 1985. BC Ministry of Environment, Lands and Parks, Victoria, BC. 268p.

Bunnell, F.L., J.F. Johnson, G.D. Sutherland and T.R. Wahbe. 2001. Tailed Frogs and forest practices – The species and ways to sustain it. Center for Applied Conservation Biology, University of British Columbia, Vancouver, BC.

Campbell, R.W., N.K. Dawe, I. McTaggart-Cowan, J.M. Cooper, G.W. Kaiser, A.C. Stewart and M.C.E. McNall. 2001. The birds of British Columbia – Volume four - Wood-warblers through old world sparrows. UBC Press, Vancouver, BC. 739 p.

Campbell, R.W., N.K. Dawe, I. McTaggart-Cowan, J.M. Cooper, G.W. Kaiser and M.C.E. McNall. 1990a. The birds of British Columbia – Volume one - Nonpasserines introduction, loons through waterfowl. UBC Press, Vancouver, BC. 514 p.

Campbell, R.W., N.K. Dawe, I. McTaggart-Cowan, J.M. Cooper, G.W. Kaiser and M.C.E. McNall. 1990b. The birds of British Columbia – Volume two - Nonpasserines diurnal birds of prey through woodpeckers. UBC Press, Vancouver, BC. 636 p.

Cannings, S.G. 1993. Rare freshwater fish of British Columbia. Fisheries Branch, BC Ministry of Environment, Lands, and Parks, Victoria, BC.

Cannings, S.G., L.R. Ramsey, D.F. Fraser and M.A. Fraker. 1999. Rare amphibians, reptiles, and mammals of British Columbia. Wildlife Branch and Resource Inventory Branch, BC Ministry of Environment, Lands and Park, Victoria, BC. 198 p.

Cannings, S.G. and J. Ptolemy. 1998. Rare freshwater fish of British Columbia. Wildlife Branch, BC Ministry of Environment, Lands and Park, Victoria, BC. 214 p.

Cannings, R.A., R.J. Cannings and S.G. Cannings. 1987. Birds of the Okanagan Valey, British Columbia. Royal BC Museum, Victoria, BC. 240p.

Cooper, J.M. 1996. Status of the Sandhill Crane in British Columbia. Wildlife Bulletin No. B-83, BC Ministry of Environment, Lands and Parks, Victoria, BC. 30 p.

Cooper, J.M. and C. Gillies. 2000. Breeding distribution of the Lewis's Woodepecker in the East Kootenay Trench in relation to fire history. Pp. 423-428 *In* Darling, L.M. (ed.). Proceedings of a Conference on the Biology and Management of Species and Habitat at Risk, Kamloops, BC, 15-19 Feb., 1999. Volume One. BC Ministry of Environment, Lands and Parks, Victoria, BC, and University College of the Cariboo, Kamloops, BC. 472 p.

Douglas, G.W., D. Meidinger, and J. Pojar (eds). 2001a. Illustrated flora of British Columbia – Volume 6 monocotyledons (Acoraceae through Najadaceae). BC Ministry of Environment, Lands and Parks, and BC Ministry of Forests, Victoria, BC. 361 p.

Douglas, G.W., D. Meidinger, and J. Pojar (eds). 2001b. Illustrated flora of British Columbia – Volume 6 monocotyledons (Orchidaceae through

Zosteraceae). BC Ministry of Environment, Lands and Parks, and BC Ministry of Forests, Victoria, BC. 379 p.

Douglas, G.W., D. Meidinger and J. Pojar (eds). 2000. Illustrated flora of British Columbia -Volume 5 dicotyledons (Salicaceae through Zypoghyllaceae) and pteridophytes, BC Ministry of Environment, Lands and Parks, and BC Ministry of Forest, Victoria, B.C. 389 p.

Douglas, G.W., G.B. Straley, D. Meidinger and J. Pojar (eds). 1998. Illustrated flora of British Columbia -Volume 2 Dicotyledons (Balsaminaceae through Cuscutaceae). BC Ministry of Environment, Lands and Parks, and BC Ministry of Forest, Victoria, B.C. 401 p.

Douglas, G.W., D. Meidinger and J. Pojar (eds). 1999a. Illustrated flora of British Columbia -Volume 3 Dicotyledons (Diapensiaceae through Onagraceae). BC Ministry of Environment, Lands and Parks, and BC Ministry of Forest, Victoria, B.C. 423 p.

Douglas, G.W., D. Meidinger and J. Pojar (eds). 1999b. Illustrated flora of British Columbia -Volume 4 dicotyledons (Orobanchaceae through Rubiaceae). BC Ministry of Environment, Lands and Parks, and BC Ministry of Forest, Victoria, B.C. 427 p.

Douglas, G.W., G.B. Straley and D. Meidinger. 1994. The vascular plants of British Columbia – Part 4 monocotyledons. BC Ministry of Forests, Victoria, BC. 257 p.

Douglas, G.W., G.B. Straley and D. Meidinger. 1991. The vascular plants of British Columbia – Part 3 dicotyledons (Primulaceae through Zygophyllaceae) and pteridophytes. BC Ministry of Forests, Victoria, BC. 208 p.

Douglas, G.W., G.B. Straley and D. Meidinger. 1990. The vascular plants of British Columbia – Part 2 dicotyledons (Diapensiaceae through Portulacaceae). BC Ministry of Forests, Victoria, BC. 158 p.

Douglas, G.W., G.B. Straley and D. Meidinger. 1989. The vascular plants of British Columbia – Part 1 gymnosperms and dicotyledons (Aceraceae through Curcurbitaceae). BC Ministry of Forests, Victoria, BC. 177 p.

Dupuis, L.A., F.L. Bunnell and P.A. Friele. 2000. Determinants of the Tailed Frog's range in British Columbia, Canada. Northwest Science. 74: 109-115.

Forbes, L.S., K. Simpson, J.P. Kelsall and D.R. Flook. 1985. Great Blue Heron colonies in British Columbia. Environment Canada, Canadian Wildlife Services, Pacific & Yukon Region, Delta, BC. 78 p.

Fraker, M.A., J.AA. Kerr and M.V. Ketcheson. 1997. Kootenay small mammals inventory phase I report. Prepared for Columbia Basin Fish and Wildlife Compensation Program, and BC Ministry of Environment, Lands and Parks, Nelson, BC.

Fraser, D.F., W.L. Harper, S.G. Cannings and J.M. Cooper. 1999. Rare birds of British Columbia. Wildlife Branch and Resource Inventory Branch, BC Ministry of Environment, Lands and Park, Victoria, BC. 244 p.

Gebauer, M.B. 1995. Status and productivity of Great Blue Heron (*Ardea herodias*) colonies in the lower Fraser Valley in 1992, 1993, and 1994. BC Ministry of Environment, Lands and Parks, Surrey, BC. 105 p.

Green, D.M., and R.W. Campbell. 1984. The amphibians of British Columbia. Royal British Columbia Museum Handbook No. 45, Victoria, BC.

Gregory, P.T. and R.W. Campbell. 1984. The reptiles of British Columbia. Royal British Columbia Museum Handbook, Victoria, BC. 102 p.

Groves, C., T. Frederick, G. Frederick, E. Atkinson, M. Atknison, J. Shepard and G. Servheen. 1997. Density, distribution, and habitat of Flammulated Owls in Idaho. Great Basin Naturalist 57(2): 116-123.

Gyug, L.W. and A. Peatt. 2000. Inventories of Sagebrush Northern Bog Lemming, Williamson's Sapsucker, and Mountain Beaver in the southern interior of British Columbia. Pp. 417-422 *In* Darling, L.M. (ed.). Proceedings of a Conference on the Biology and Management of Species and Habitat at Risk, Kamloops, BC, 15-19 Feb., 1999. Volume One. BC Ministry of Environment, Lands and Parks, Victoria, BC, and University College of the Cariboo, Kamloops, BC. 472 p.

Haas, G.R. 2001. The mediated associations and preferences of native Bull Trout and Rainbow Trout with respect to maximum water temperature, its measurement standards, and habitat. Pp. 53-55 *In* Brewin, M.K., A.J. paul, and M. Monita. Bull Trout II Conference proceedings.

Hobbs, J. 2002. Confidential folio of Western Screech-owl (*O.k. macfarlanei*) sites in the southern interior of British Columbia. BC Ministry of Water, Land and Air Protection, Kamloops, BC.

Hooper T.D. 1997. Status of the Prairie Falcon in the Cariboo-Chilchotin region, British Columbia. Wildlife Working Report No. WR-85, BC Ministry of Environment, Lands and Parks, Williams Lake, BC. 11 p.

Identified Wildlife Management Strategy. 2002. http://wlapwww.gov.bc. ca/wld/identified.

Jordan, R., M.Porter and E. Parkinson. 2000. Habitat factors affecting the abundance and distribution of juvenile Cutthroat Trout (*Oncorhynchus clarki*) and Coho Salmon (*Oncorhynchus kisutch*). Canadian Journal of Fisheries and Aquatic Sciences 57(4): 766-774.

Kershaw, L., J. Gould, D. Johnson and J. Lancaster (eds). 2001. Rare vascular plants of Alberta . University of Alberta Press, Edmonton, AB. 484 p.

Kershaw, L., A. MacKinnon and J. Pojar. 1998. Plants of the Rocky Mountains. Lone Pine Publishing, Edmonton, AB. 384 p.

Kinley, T. 2001. Recovery action plan for the south Purcells subpopulation of Mountain Caribou – 3rd Draft. Prepared for BC Ministry of Environment, Lands and Parks, Victoria, BC; Tembec Industries Inc., Cranbrook, BC; and East Kootenay Environmental Society, Kimberly, BC.

Krebs, J., D. Lewis, J. Woods, B. McLellan and A. Fontana. 1993. Wolverine ecology and habitat use in the north Columbia Mountains. Draft working plan 1993-1999.

Machmer, M. 1996. Management prescription for a Great Blue Heron nesting site located near Mud Lake, Arrow Forest District. Prepared for Small Business Forest Enterprise Program, Arrow Forest District, Castlegar, BC.

Mackinnon, A., J. Pojar and R. Coupe (eds). 1992. Plants of northern British Columbia. Lone Pine Publishing, Edmonton, AB. 352 p.

McLellan, B.N. and F.W. Hovey. 2001. Habitat selected by Grizzly Bears in a multiple use Landscape. Journal of Wildlife management 65(1): 92-99.

Mcellan, N.B. 1995. Developing a habitat suitability model for Mountain Caribou in the north Columbia Mountains - Preliminary report #4 - Draft. BC Ministry of Forests, Revelstoke, BC, and Canadian Parks Service, Revelstoke, BC.

Mayhood D.W. 2000. Provisional evaluation of the status of Westslope Cutthroat Trout in Canada. Pp. 579-585 *In* Darling, L.M. (ed.). Proceedings of a Conference on the Biology and Management of Species and Habitat at Risk, Kamloops, BC, 15-19 Feb., 1999. Volume Two. BC Ministry of

Environment, Lands and Parks, Victoria, BC, and University College of the Cariboo, Kamloops, BC. 520 p.

Nams, V.O., G. Mowat and M.A. Panian. 2001. Scale dependent habitat selection by Grizzly Bears. http://www.env.gov.bc.ca/kor/wld/reports/htmlfiles/grizhab/grizhabp.htm.

Nargosen, D.W. and M.A. Fraker. 2002. Chipmunks (*Tamias*) of the Kootenay region, British Columbia: distribution, identification, taxonomy, conservation status - Final summary report. Prepared for Columbia Basin Fish and Wildlife Compensation Program, Nelson, BC.

Nargosen, D.W. and R.M. Brigham. 1993. Bats of British Columbia. Royal British Columbia Museum Handbook, Victoria, BC. 164 pp.

Newhouse, N. 1997. East Kootenay Badger project: 1996/97 year-end summary report. Prepared for BC Ministry of Environment, Lands and Parks, Forestry Renewal BC, Columbia Basin and Wildlife Compensation Program, and Kootenay National Park.

Scott, W.B. and E.J. Crossman. 1973. Freshwater fishes of Canada. Fisheries Research Board of Canada, Ottawa, QC. Bulletin 184.

Steeger, C., M. Machmer and E. Walters. 1996. Ecology and management of woodpeckers and wildlife trees in British Columbia. Environment Canada Fraser River Action Plan, BC. 23 p.

Storm, R.M. and W.P. Leonard (eds.). 1995. Reptiles of Washington and Oregon. Seattle Audubon Society, The Trailside series, Seattle, WA. 176 p.

US Fish and Wildlife Service. 1998. Bull Trout interim conservation guidance. Lacey, WA. 47 p.

Vitt, D.H., J.E. Marsh, and R.B. Bovey. 1988. Mosses lichens and ferns of northwest North America. Lone Pine Publishing, Edmonton, AB. 296 p.

Waye, H.L. 2000. Status of the Northern Leopard Frog in the Creston Valley Wildlife Management Area, British Columbia. Pp. 413-414 *In* Darling, L.M. (ed.). Proceedings of a Conference on the Biology and Management of Species and Habitat at Risk, Kamloops, BC, 15-19 Feb., 1999.Volume One. BC Ministry of Environment, Lands and Parks, Victoria, BC, and University College of the Cariboo, Kamloops, BC. 490 p.

Wilson, D.E. and S. Ruff (eds.). 1999. The Smithsonian book of North American mammals. The Smithsonian Institution and The American Society of Mammalogists. UBC Press, Vancouver, BC.750p.

APPENDIX 24.3: Wildlife Tree Retention Methodology

Wildlife tree retention (WTR) targets for the SRMMP area were determined by biogeoclimatic subzone based on interpolating Table A3.1 of the Landscape Unit Planning Guide (LUPG)[1] to the nearest tenth of a percent.

Using the data from the Cranbrook Timber Supply Area (Cranbrook TSA) Timber Supply Review 2 (TSR2) data file, the "*percent of the biogeoclimatic subzone within the landscape unit available for harvest*" was calculated by dividing the timber harvesting land base area by the provincial Crown forest land area.

Through previous work by the Ministry of Environment Forest Ecosystem Specialist and the Ministry of Forests District Planning Officer, a professional judgement call was made by Landscape Unit (LU) by biogeoclimatic subzone to determine a "recommended age break for determining harvested areas". A further judgement call was then made as to the "estimated percent of harvested areas estimated to have been harvested without wildlife tree retention". These judgement calls were based upon local field knowledge, general species composition, fire history, observations of past harvesting practices, and age class distribution data. The "*percent of the area available for harvesting in a landscape unit that has already been harvested without wildlife tree retention*" was then calculated (by LU by biogeoclimatic subzone) by first multiplying the provincial Crown forest land area less than the recommended age break for determining harvested areas by the percent estimated to have been harvested without wildlife tree retention and then dividing this number by the total provincial Crown land area.

Based on the calculated values for "*percent of the biogeoclimatic subzone within the landscape unit available for harvest*" and for "*percent of the area available for harvesting in a landscape unit that has already been harvested without wildlife tree retention*", the wildlife tree retention targets were then calculated using an EXCEL algorithm developed by Hal MacLean (Ministry of Forests Timber Supply Analyst) to interpolate Table A3.1 from the LUPG.

Table A3.1 was used to determine wildlife tree retention targets because landscape level biodiversity objectives have already been set. These landscape level biodiversity objectives have been set through Objective 2 of the Kootenay Boundary Higher Level Plan Order and through the SRMMP process, which has further refined and clarified Objective 2 by spatially deploying old growth management areas (OGMA) and mature management areas (MMA) within the SRMMP area.

---

[1] Landscape Unit Planning Guide, Ministry of Forests and Ministry of Environment, Land & Parks, March 1999

Appendix 24.4 General Wildlife Conservation Considerations

Background

The SRMMP area is one of those increasingly rare areas that have retained a high degree of ecological integrity and processes. This phenomenon is generally attributed to the fact that much of the SRMMP area remains relatively remote and free of human habitation. As a consequence, the species diversity and populations of large mammals in the plan area remains among the highest on the continent.

Chapter B.9.0 as well as Appendices 7.0, 8.0, 24.2 and 24.4 all provide information on the species which reside in the SRMMP area, and Chapter B.9.0 presents the prescribed direction to manage those species and/or their habitats. Grizzly bear, Rocky Mountain Bighorn sheep, mountain goat and bull trout are often regarded as "feature species" of the plan area, and specific plan direction relates to them as well as to others. Section B.9.13 applies to species groups and habitat types not covered by other parts of Chapter B.9.0. Trans-boundary fish and wildlife populations and species at risk are also prime considerations in the SRMMP.

Discussion

The SRMMP represents an opportunity for communication and education relating to the fulfilment of conservation and provincial wildlife management goals and assuring that ecological integrity is sustained in a rapidly changing world.

Ecological integrity can be defined as a continuum of characteristics that a landscape should possess. These include ecosystem health, biodiversity, stability and sustainability through the maintenance of structural and functional components of the system in perpetuity (Noss, 1995).

The Canadian Parks Service (1997) has compiled a list of major stressors to ecological integrity. These include:

- destruction, loss and compaction of organic matter resulting in a decreased capability of a site to support existing vegetation, a potential increase in soil erosion and alteration of natural watercourses.
- decreased vegetation production and growth rates which adversely affect age and structure and often lead to changes in species diversity
- introduction of non-native species leading to changes in species composition
- displacement of wildlife from preferred high quality habitats
- landscape fragmentation due to human activity and development of facilities
- loss of habitat linkage or connectivity
- loss of suitable habitat
- loss of Montane habitats due to human development and fire control
- wildlife - human conflicts
- effects of human activities on water quality
- altered predator-prey relationships

Provincially, the overarching wildlife management goal is to maintain and enhance wildlife and wildlife habitats to ensure an abundant and self-sustaining wildlife resource. To accomplish this goal, the provincial wildlife program has a strategic goal to manage the province's resources for the benefit and enjoyment of British Columbians by maintaining an optimal balance among ecological, cultural, economic and recreational needs.

The following provincial wildlife management principles are intended to realize these overarching goals and they guided the writing of Chapter B.9.0 of the SRMMP:

Provincial Wildlife Program Strategic Goal (Managing Wildlife to 2001)

- To manage the province's wildlife resources for the benefit and enjoyment of British Columbians – by maintaining an optimal balance between ecological, cultural, economic and recreational needs.

Provincial Wildlife Goals

- to maintain and enhance wildlife and wildlife habitats to ensure an abundant and self-sustaining wildlife resource
- to maintain, enhance and promote opportunities for the public to appreciate, study and view natural landscapes, plant communities and wildlife in their natural habitats
- to maintain and promote recreational opportunities to hunt game species in their habitats
- to facilitate commercial uses of wildlife

Provincial Wildlife Management Principles

- to base wildlife management on sound and supportable biological and ecological principles
- to ensure that wildlife and wildlife habitat classification systems recognize both the current use and the inherent capability of various ecosystems
- to base management emphasis on the health of ecological systems and their inherent ability to support wildlife populations as opposed to the management of individual animals
- to encourage and accommodate a wide range of wildlife resource uses while ensuring that the viability of a species, population or habitat is not jeopardized
- to recognize the need for wildlife to share the environment with other users and where possible practice integrated use
- to reintroduce animals to their historic range where possible
- to focus management attention on indigenous wildlife species
- to ensure, through the standards established by the national Committee on the Status of Endangered Wildlife in Canada (COSEWIC) and the provincial identified wildlife management strategy, the protection of threatened and endangered species

APPENDIX 24.4 GUIDE OUTFITTING IN THE EAST KOOTENAY

No one could summarize the history of guide outfitting in the East Kootenay better than Leo Rutledge. In his book "That Some May Follow" Leo states, " Outfitting began here in the 1800's. Beyond sternwheelers, pack trains were then the major mode of transport in the East Kootenay. Young men learned to break and pack horses and mules just as today's young people learn to drive a car. Packing was then simply a mode of transport and wildlife was little more than a source of meat for natives, miners and early settlers. It was not until the first years of this century that people came to this valley for the express purpose of enjoying its wilderness, mountain meadows and wildlife. One of the first was William Hornaday, of the New York Zoological Park who made an extended hunting trip in the Upper Elk, Fording and Crossing Creek areas in 1905. In the following years, more and more hunters came into the valley that became known as "Little Africa." To cater to them, residents of the valley kept strings of equipped horses, which together with tents and other camp gear became known as their "outfit." The 1930's and 40's were the heydays of outfitting in the Kootenays. Hunters came in ever increasing numbers and many new outfitters, most of them trained by the older ones, got into the business and started exploring new areas, further and further from the main valley."

In 1948, to avoid further conflict over area of use, the established guide outfitters met to divide the territory among themselves and establish personal guiding areas upon which other guides could not infringe.

During the mid 1970's the administration of guide outfitters changed from the Conservation Officer Service to the wildlife management section of the Fish and Wildlife Branch. From this juncture in time to the late 1980's, further negotiations were conducted between the guide outfitters and representatives of the Fish and Wildlife Branch with the express intent of consolidating the smaller guiding territories into larger, more viable economic units (Ray Demarchi, pers.comm). Today the big game guiding industry continues to contribute to the diverse cultural fabric of the Kootenays and remains a stable and vibrant business interest that provides significant stimulus to provincial and local economies.

References

Rutledge, Leo. 1989. That Some May Follow. The History of Guide Outfitting in British Columbia. Guide Outfitters Association of British Columbia publication. Freisen Printers, Cloverdale, B.C. 28pp.

APPENDIX 24.4 RIPARIAN

Ecologically, "riparian" is often referred to as the area adjacent to streams, lakes and wetlands that is wet enough, or inundated frequently enough, to develop and support natural vegetation distinct from that of more freely drained upland sites *(Riparian Management Area Guidebook, 1995)*. Riparian areas contain elements of both aquatic and terrestrial ecosystems which mutually influence each other and occur as transitions between aquatic and upland habitats (Knutson and Naef, 1997). Although limited in scale, riparian habitat is considered a rich and vital resource that contributes to:

- a higher diversity and abundance of plants, fish and wildlife than any other habitat
- important fish spawning and wildlife breeding habitat, seasonal ranges and movement corridors
- water quality maintenance and flood control
- recreation and aesthetics

Riparian zones are of significant importance to a variety of wildlife species that forage, reproduce and migrate along valley bottoms. For example, the results of a recent study of bird density and diversity suggest that riparian areas are disproportionately important in maintaining avian diversity in conifer dominated forests of the Montane Spruce zone (Kinley and Newhouse, 1996).

Within the Southern Rocky Mountain Management Plan area the quality and availability of riparian habitat is also important for large mammals like wolves, moose, elk and white-tail deer. With respect to bears, habitat use research in the Flathead River watershed has revealed, that in relation to other habitats, riparian ecosystems receive an inordinate amount of use by grizzly and black bear particularly in the spring and autumn (McLellan and Hovey 2001). In fact, the level and duration of use in these low elevation riparian habitats by grizzly bear is unique in Southern Canada

In recognition of this value and to ensure that the viability of the riparian ecosystem corridor is maintained, an enhanced riparian management zone adjacent to the main Flathead River and several of its more significant tributaries has been delineated by grizzly bear research scientists.

References

B.C. Ministry of Environment, Lands and Parks and B.C. Ministry of Forests. Riparian Management Area. Participants Guide. 73 pp.

Knutson, K.L. and Naef, V.L. 1997. Management recommendations for Washington's priority habitats: riparian. Wash. Dept. of Fish and Wildl., Olympia. 181pp.

McLellan, B.N., and Hovey, F.W. 2001. Habitats selected by grizzly bear in a multiple use landscape. J. wildl. Manage. 65:92-99

Sylvan Consulting. 1993. Progress Report: Riparian Wildlife Research in Cranbrook Forest District 1992/93. Prepared for BC Environment, Ministry of Environment, Lands and Parks, Cranbrook and Victoria. 28 pp.

APPENDIX 24.4 UNGULATES OF SPECIAL SIGNIFICANCE IN THE PLAN AREA

Rocky Mountain Bighorn Sheep: A Blue Listed Ungulate Species:

Distribution and Habitat

Rocky Mountain bighorn sheep are predominately distributed along the Rocky Mountains in Alberta and British Columbia from the southern Peace River to the international border. Small populations have also been introduced to two sites in central British Columbia which are outside their normal area of occupation.

In British Columbia, they are distributed in localized populations along the Continental divide with the most continuous distribution area situated between the Kicking Horse River and the Canada – USA border.

Traditionally, in the south- east area of British Columbia, Rocky Mountain bighorn sheep range between low elevation winter habitat, situated in the Rocky Mountain trench and the high elevation alpine and sub-alpine grasslands in the summer season. Throughout their range, security habitat is important and consequently they gravitate to grassland habitats with steep, rugged escape terrain in close proximity.

Winter ranges are critical. Most are situated on steep southerly aspects that provide the maximum exposure to solar radiation. As a consequence foraging opportunities are enhanced and energy expenditure is reduced. Some localized populations also use high elevation windswept alpine grassland slopes during the winter.

Abundance

In 1996 the total population of Rocky Mountain bighorn sheep in British Columbia was estimated to be 2905 animals. Although the population now appears to have stabilized, it is still recovering from the heavy losses attributed to the catastrophic winters of 1995-96 and 1996-97. Recovery of the Rocky Mountain bighorn sheep population has also been compromised by continued disease related die-offs and significant predation effects.

Status

The Conservation Data Centre ranks species according to a number of criteria and then assigns them to a red, blue or yellow listing. A red or blue listing establishes endangered/threatened and sensitive/ vulnerable status respectively to a specific species while a yellow listing describes species not at risk.

Currently, Rocky Mountain bighorn sheep, in British Columbia, are classified as a blue listed species. Besides the low population numbers and limited recruitment potential, they are blue listed because of the limitations of suitable habitat and the frequency of re-current epidemic epizootic related die-offs.

Rocky Mountain bighorn sheep have also been designated as an identified wildlife species, through the Forest Practices Code, and consequently warrant special management considerations. In this regard it is incumbent upon the Ministry of Forests (MOF) to demonstrate that forestry, range or public recreation activities do not impose a detrimental effect on identified wildlife species like Rocky Mountain bighorn sheep.

Commercial recreation, however, is not a component of the MOF mandate and consequently wildlife-related impacts accrued from commercial recreation activities must be addressed by Land and Water B.C. Inc.

Threats

The viability of Rocky Mountain bighorn sheep populations may be affected by:

- epizootic disease transmission from domestic livestock
- limited carrying capacity
- increased predation
- inter-specific competition for limited forage resources on shared winter ranges
- natural fragmentation or isolated herd distribution and the subsequent vulnerability to catastrophic events
- habitat loss accrued from forest encroachment, industrial and recreation activities
- increased potential for harassment and displacement from preferred habitat

Conservation Measures

Conservation efforts currently being conducted to maintain viable populations of Rocky Mountain bighorn sheep include improved domestic livestock grazing regimes, acquisition of important winter ranges, access planning, prescribed forage enhancement burning initiatives and the maintenance of a very conservative harvesting strategy.

Other management efforts may include the use of lungworm treatments, the provision of trace minerals and augmentation of the population through transplant introductions.

Mountain Goat: A Regionally Significant Ungulate Species:

Photo credit: Darcy Monchak

Distribution and Habitat

In North America, mountain goats occur in British Columbia, Alberta, Alaska, Washington, Idaho, Montana, the Yukon and Northwest Territories. Their distribution in British Columbia is extensive with populations occupying the steep, rocky mountainous terrain and sub-alpine and alpine habitats of the Cascade, Coast, Cassiar, Monashee, Selkirk, Purcell and Rocky Mountain ranges of the Cordilleran region in the province.

Mountain goat frequent alpine, sub-alpine and steep forested habitats and like other mountain ungulates, characteristically migrate between high and low elevations in response to climatic variation. During the summer season, mountain goat usually occupy or gravitate to alpine habitat in close proximity to escape terrain and, similar to Rocky Mountain bighorn sheep, migrate to low elevation or steep, exposed south and south-west aspects in the winter.

Abundance

In 1997, the B.C. Wildlife Branch estimated that approximately 49,000 mountain goat or two-thirds of the world's mountain goat population resided in British Columbia. Approximately one-fifth of this population exists in the Kootenay Region. The remaining one third is proportionally distributed in estimated amounts of 1,700 in Alberta, 1,500 in the Yukon, 1,500 in the North West Territories, 12,000 in Alaska, 5,000 in Washington, 2,800 in Idaho and 4,500 in Montana.

Status

The Conservation Data Centre ranks species according to a number of criteria and then assigns them to a red or blue list, which establishes endangered/threatened and sensitive/vulnerable status respectively to a specific species while a yellow listing describes species not at risk.

Currently, mountain goats in British Columbia are classified as a yellow listed species. However, mountain goats have also been designated as an identified wildlife species, through the Forest Practices Code, and consequently warrant special management considerations. In this regard it is incumbent upon the Ministry of Forests (MOF) to demonstrate that forestry, range or public recreation activities do not impose a detrimental effect on identified wildlife species like mountain goats.

Commercial recreation, however, is not a component of the Ministry of Forests (MOF) mandate and consequently wildlife-related impacts accrued from commercial recreation activities must be addressed by Land and Water B.C. Inc.

Population Management History

In 1949, the B.C. Game Branch annual report mentioned a decline in mountain goat populations along the Rocky Mountain Trench. Although a subsequent reduction in an individual's personal harvest quota of mountain goat ensued, the trend in population reduction continued. Further declines were subsequently noted in later B.C. Game Branch reports, however, seasonal hunting lengths remained liberal and there was no reduction of the number of mountain goat licences issued in the Province.

In the 1960's a massive over-harvest of mountain goats occurred in the Kootenay region. This was attributed to:

- a prevalent philosophy among wildlife biologists and administrators to maximize wildlife harvests
- a deficient management data base
- a deficient understanding of mountain goat vulnerability
- a proliferation of road development
- no access regulations

In a dramatic reaction to the consequences of over-harvesting, the mountain goat hunting season was closed between 1971 and 1977. Since 1978 a more rigorous and conservative management strategy has been implemented. This approach continues and is reflected in the recent 1997 reduction to approximately one-half the limited entry harvesting opportunities issued prior to this date. This action was precipitated in response to concerns raised from recent inventory and harvesting data reviews. Considering the dramatic decline in observed numbers generated from a 1998 inventory in the Purcell Mountains it is highly probable that further reductions will ensue.

Threats

Mountain goat populations may be adversely affected by:

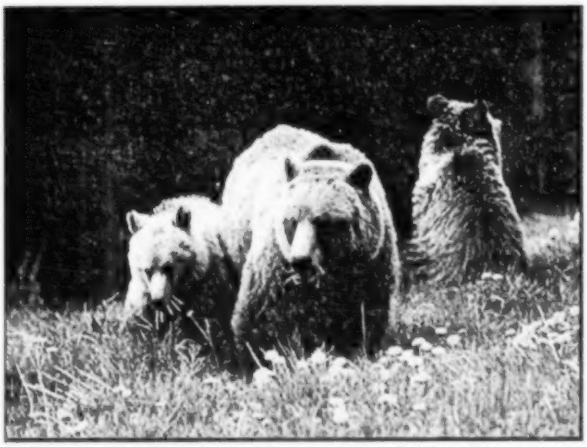
- access continues to be relatively unregulated
- harassment and displacement potential remains high
- habitat values are not identified and protected
- predation issues are not addressed
- conservative harvesting strategies are not maintained

Conservation Measures

In conjunction with reduced harvesting quotas and habitat protection measures, efforts are being initiated to reduce adverse impacts on mountain goat populations through more stringent access management controls. In conjunction with these initiatives is the continued effort to accelerate population inventory. This information is required to establish an accurate measure of mountain goat numbers and distribution. Plans to initiate research projects designed to acquire more detailed knowledge of mountain goat physiology, habitat requirements and population dynamics are also being contemplated.

The completion of a comprehensive biophysical mapping initiative, which identifies mountain goat habitat and establishes an associated capability and suitability rating, is also being pursued.

APPENDIX 24.4 WIDE-RANGING CARNIVORES



The Southern Rocky Mountain Management Plan (SRMMP) area supports such large carnivores as grizzly and black bear, wolf, cougar, martin, wolverine and lynx.

Grizzly bear, perhaps the species with the highest international profile, exist in uniquely high numbers in the Flathead watershed. This high population density phenomenon is principally attributed to the fact that the Flathead is the only large, wide, flat-bottomed valley in southern Canada without human settlement. As a consequence of inherent habitat diversity and the lack of intrusive impacts that often occur when communities are situated in grizzly bear habitat, grizzly bear in the Flathead River watershed have been able to utilize all habitats, regardless of location, and maintain behavioral patterns that have virtually disappeared in other interior areas of the Province (B. McLellan, pers.comm.).

The high density of bears and high reproductive rates of these bears in the Flathead has also contributed to the area's importance by maintaining source populations that help establish grizzly bear in areas adjacent to the Flathead watershed (B. McLellan, pers.comm.).

The importance of this area for other wide-ranging carnivores is supported by Dr. John Weaver's comment, that "a unique community of carnivore species resides in the trans-boundary Flathead region that appears unmatched in North America for its variety, completeness, use of valley bottom land and density of species which are rare elsewhere" (Weaver 2001).

The upper Elk River area also supports a high population of grizzly bear. This is likely due to the fact that much of the area in the upper reaches of the Elk River watershed is also unsettled and remote.

Grizzly Bear

Grizzly Bear are considered an "umbrella species" in biodiversity management. In essence, the theory supporting this concept is that by managing for the biology and ecology of grizzly bear, the probability of providing benefits to a large number of other biota and maintaining functional ecosystems is relatively good. However, regardless of this theory, it is recognized that many species other than grizzly bear reside in the SRMMP area and collectively they contribute to the area's overall biological diversity. The perplexing question then relates to why there is a continued focus on large mammals and large carnivores in particular. One explanation is that grizzly bear represent a wildlife value of regional and international significance. Another is clearly based on the human bias of regarding other large mammals, similar to us, as important. A more rationale reason relates to the extensive geographic scale of grizzly bear home ranges and the assumption that by maintaining functional ecosystem conditions suitable for grizzly bear and other large carnivores, over large areas of the landscape, that by default, conditions for other species will be maintained. This "umbrella" concept, however, clearly has the potential for some species to collapse. Consequently, because of the shortcomings of the umbrella approach, other ecological attributes perhaps not vital to large carnivores but required by other indigenous and migratory species should be maintained in the SRMMP area (B. McLellan,pers.comm.).

Grizzly Bear Habitat

Grizzly Bear occurrences are well-documented in association with floodplains. In the Flathead and Wigwam river valleys, for example, floodplains are comprised of a complex mosaic of gravel bars, spruce/cottonwood stands, extensive willow/red-osier dogwood dominated sites, dense forb dominated sites, open-dry meadows and thickets of lodgepole pine, subalpine fir, spruce and Douglas fir (B. McLellan,pers.comm.). Floodplains are used intensively by both species of bears and in particular by grizzly bears during the spring and autumn (McLellan and Hovey 2001).

Grizzly Bear occurrences are also well-documented in association with broad landscapes of high elevation and complex terrain, with a high composition of alpine, avalanche tracks, burns and other open habitats (McLellan 1989; Waller and Mace 1998). Virtually all studies of bear habitat use in mountainous environments demonstrate the use of avalanche tracks, which provide important forage areas in the spring and to a lesser degree in summer and fall. Within avalanche tracks, Grizzly Bears select south aspects, and areas dominated by grasses and forbs with minimal shrub abundance. They avoid steep slopes but frequently use all elevational parts of avalanche tracks – upper start zones, tracks, and lower runout zones. These patterns are tied to feeding site selection, based on forage values and visual cover. Bed sites are frequently found both in forest adjacent to avalanche tracks (within 25 metres from the forest/avalanche edge) and directly within avalanche tracks (Ramcharita 2000).

A wide variety of human activities change the capacity of habitats to support Grizzly Bears. These include habitat alteration (eg. logging), habitat loss (eg. road building), and the impacts of killing (poaching and defence of life and property) due to increased access. With regard to logging, bears avoid avalanche tracks adjacent to cut-blocks due to removal of escape cover and loss of bed sites. Where bears have been seen to select areas close to logging roads that traverse avalanche tracks, the roads have had minimal traffic and have been close to high quality habitat (Zager 1980).

Avalanche Track Suitability Ratings for Grizzly Bear Habitat

Habitat suitability ratings (for spring/early summer foraging by Grizzly Bears) of avalanche paths were generated based on the amount of Upland Herb and Wetland Herb cover types within an avalanche path polygon following the preliminary ranking guidelines developed by Mowat (2000). Suitability rating guidelines for avalanche path habitats are currently being developed for the Kootenay Region by BC Environment (P. Holmes, pers. comm.), but were incomplete and so were not available for use in the SRMMP. However, the following interim criteria (Ferguson et.al.2001), which were developed in consultation with BC Environment (now the Ministry of Water, Land and Air Protection) and Invermere Forest District staff, pending completion of the regional guidelines, were used to classify avalanche tracks within the SRMMP area.

- High suitability was assigned to avalanche paths with > 5 ha of Upland Herb + Wetland Herb classes, or where these vegetation classes comprised > 20% of the area of an avalanche path polygon.
- Moderate suitability was assigned to avalanche paths with 1 to 5 ha of Upland Herb + Wetland Herb classes, or where these vegetation classes comprised > 10% of the area of an avalanche path polygon.
- Low suitability was assigned to avalanche paths with < 1 ha of Upland Herb + Wetland Herb classes.
- Not rated was assigned to avalanche path polygons where > 50% of a polygon's area was unclassified due to lack of cover type data.

Provincial Grizzly Bear Conservation Strategy:

The rationale for developing a grizzly bear conservation strategy for British Columbia was based on the knowledge that, from a continental perspective, grizzly bear have declined to the point where the species is extinct in the southern and eastern segments of its range and is considered vulnerable or threatened in much of its remaining range.

Although British Columbia has a significant population of grizzly bear much of the existing habitat is considered threatened from increased human populations and the demand for land and resources. Consequently, nearly all grizzly bear ecosystems in British Columbia are at risk under current land use activities. The British Columbia Grizzly Bear Conservation Strategy was designed to help reverse this trend and, through implementation of the mandate of the strategy, to ensure the continued existence of grizzly bear and their habitats.

The goals and objectives of this Provincial strategy address the loss and alienation of grizzly bear habitat, interactions with humans and international considerations.
Goal 1

- to maintain in perpetuity the diversity and abundance of grizzly bear and the ecosystems on which they depend throughout British Columbia.

Objectives

- to increase the scientific knowledge base of grizzly bear and their habitats
- to maintain the genetic diversity of grizzly bear populations.

Goal 2

- to improve the management of grizzly bear and their interactions with humans

Objectives

- to modify incompatible human activities
- to improve the management and regulation of hunting

Goal 3

- to increase public knowledge and involvement

Objectives

- increase public knowledge of grizzly bear and their requirements
- increase public involvement in appropriate grizzly bear management strategies

Goal 4

- to increase international cooperation in management and research

Objective

- British Columbia to take a leading role in management and research of grizzly bear

SRMMP Grizzly Bear Conservation Strategy: ***(This is confusing - were these methodologies applied to end up with Section 9.4? If yes, then should be written in that tense, if not then this probably shouldn't be here)***

To meet the conservation goals of ensuring the viability of large carnivore species both north and south of Highway #3 and enable movement across this potential fracture site, the SRMMP area could be *(OR WAS?)* delineated into three zones.

1. Source nodes
    - areas where high densities of large carnivores are found and where they reproduce well enough to provide a surplus of dispersing individuals
2. Fracture/sink area
    - areas where movements of large carnivores are often restricted by human settlement, transportation corridors and more animals are inevitably killed than produced
3. Matrix area
    - areas where reproduction and mortality are likely near equal

Conceptually, the source nodes should be managed for high densities of carnivores to encourage emigration. The matrix should be managed for maintaining moderate densities of carnivores, while the fracture should be managed to reduce the number of moralities of large carnivores and to provide specific linkage areas across the fracture where animals can remain for long enough periods of time to feel secure and successfully disperse across the fracture.

The southern source nodes include the Flathead and Wigwam drainages. Both areas have no permanent human settlement and a relatively high diversity and density of large carnivores. The intent of the conservation strategy, in the southern nodes, is to maintain high densities and a surplus of these species through appropriate habitat and recreation management and conservative hunting and trapping regulations for more sensitive species such as grizzly bear and wolverine (B. McLellan. pers. comm.).

Wide Ranging Carnivore Management Principles: (doesn't belong here – should be in 9.4)

Grizzly Bear

- maintain normal grizzly bear behavioural patterns
- maintain optimum foraging opportunities for grizzly bear by ensuring landscape habitat linkage and connectivity (appendix) opportunities
- manage and conserve the suitability and functional integrity of riparian, avalanche and berry producing habitats for grizzly bear use
- maintain habitat effectiveness and security areas by reducing the potential for displacement of grizzly bear from preferred habitats
- retain adequate security cover

- maintain adequate prey species
- minimize bear and human encounters
- establish the three linkage zones, expressed in the Identification of Grizzly Bear Linkage Zones along the Highway 3 Corridor of Southeast British Columbia and Southwest Alberta (Apps, 1997), with the assistance of current private property owners and conservation organizations

Fisher protect the population of this species (should be in 9.4)

- maintain a dense and diverse prey source
- maintain sufficient amounts of mature forested habitat and coarse woody debris in known habitats
- maintain riparian areas with a natural distribution of older deciduous trees
- minimize human access in known use areas

Wolf maintain suitable habitat conditions and behaviour patterns (should be in 9.4)

- avoid displacement of wolves during critical denning period

Wolverine (should be in 9.4)

- protect critical habitats including denning sites
- protect species from human disturbance

Badger (should be in 9.4)

- protect the population of this species
- protect species from human disturbance
- maintain a dense and diverse prey source
- augment the population through translocation

References

Apps, C.D. 1997. Identification of grizzly bear linkage zones along the highway 3 corridor of southeast British Columbia and southwest Alberta. Aspen Wildlife Research. Calgary, Alberta.

British Columbia Ministry of Environment, Lands and Parks 1995. A Future for the Grizzly: British Columbia Grizzly Bear Conservation Strategy. 15pp.

Ferguson, R. S., and Pope, B. 2001. Inventory and Classification of Avalanche Paths in Tree Farm Licence # 14, Invermere Forest District, British Columbia. 15pp.

McLellan, B.N., and Hovey, F.W. 2001. Habitats selected by grizzly bear in a multiple use landscape. J. wildl. Manage. **65**:92-99

McLellan, B.N.,1989. Effects of Resource Extraction Industries on Behaviour and Population Dynamics of Grizzly Bears in the Flathead Drainage, British Columbia and Montana. Ph. D. Thesis, Univ. Brit. Col. 115pp.

Mowat, G., 2000. Avalanche chute mapping using air photos: Mapping and rating avalanche chutes for grizzly bears in the Kootenay Region of British Columbia. Draft report prepared for BC Environment, Habitat Management Section, Kootenay Region. Timberland Consultants Ltd., Nelson.

Ramcharita, R.K. in prep. Grizzly bear use of avalanche chutes in the Columbia Mountains, B.C. M.Sc. thesis, Faculty of Forestry, Univ. Brit. Col.

Waller, J.S., and R.D Mace. 1998. Grizzly bears habitat selection in the Swan Mountains, Montana. Journal of Wildlife Management 61:1032-1039.

Weaver, J.L., 2001. The Transboundary Flathead. A Critical Landscape for Carnivores in the Rocky Mountains. 58pp.

Zager, P.E., 1980. The influence of Logging and Wildfire on Grizzly Bear habitat in Northwestern Montana. Ph. D. Thesis, Univ. Montana.

APPENDIX 24.4 - ACCESS AND WILDLIFE CONSERVATION

Introduction

Access management is one of the most significant issues affecting environmental stewardship and wildlife conservation in the Kootenay region. As competing access demands and recreational activities on Crown land increase in intensity the need to regulate and balance competing uses and interests becomes more imperative. Accordingly, integrated and comprehensive strategic access management planning processes which ensure the maintenance of a diversified, quality recreational experience, and a viable economic, social and environmental future are required. With respect to strategic land use planning, access management is an essential element in the facilitation of land use decisions which determine: appropriate and compatible recreation activities; appropriate tenure application locations; a methodology for reducing conflict and providing certainty; the establishment of a balanced deployment of recreation opportunities and the development of applicable management guidelines; the establishment of appropriate land-use zoning designations; and the recognition of sustaining environmental stewardship.

A principle problem, however, is that no comprehensive provincial or regional integrated strategic planning process which effectively addresses industrial, public, commercial or government access related issues through the development and implementation of explicit zoning, management criteria and applicable legislation, has yet been officially endorsed. As a consequence, land-use planning and resource allocation processes continue to remain controversial and unresolved.

Access Planning History in the East Kootenays

From the early 1960's, access management recommendations, based on wildlife conservation objectives, were primarily initiated by British Columbia Environment (BCE) wildlife or habitat management staff in response to resource development activities which had the potential to adversely affect wildlife and habitat-related interests.

If approved through an Order In Council (OIC), access management recommendations were implemented and enforced through the regulations in the Wildlife Act. The pertinent sections of the Wildlife Act which were used prior to 1997 included Section 110dd (Vehicle Access Hunting Closure), Section 77 (Road Closure) and Section 111b (Area Closure).

Traditionally, access planning focused on road access management. However, as this focus did not address wildlife conservation issues in a comprehensive ecological context, access planning evolved to a more proactive process where area-based determinations, commonly referred to as access management areas (AMA's), were established. Regardless of the form of regulation, the intent remained focused on wildlife species, populations and wildlife habitat protection and conservation.

Although access management regulations were developed and established with the intention of ensuring sustainable conservation management objectives and principles, they were often controversial and didn't engender complete support from all user group sectors. This problem was primarily attributed to the perception that conservation-based regulatory access decisions were discriminatory and biased in favour of individuals or specific client groups. Unfortunately, at the time, no strategically comprehensive or integrated land-use or access planning forum, through which cumulative impact assessments, conservation, economic and social needs could be debated, was in existence, and consequently the full spectrum of access-related issues was not addressed. However, from BCE's perspective, the importance of maintaining access management decisions made to address wildlife conservation concerns remains relevant.

In 1985 the Ministry of Environment and Parks (MOE) completed the Elk-Flathead Strategic Environmental Management Plan, that subsequently resulted in the preparation and completion of a complementary Operational Wildlife Management Plan in 1986. An important element of this initiative related to access planning. The MOE considered access planning so important that they recommended "that an access management plan be prepared for the Elk and Flathead Valleys under the co-ordination of the Ministry of Forests". Unfortunately, the Elk-Flathead Strategic Environmental Management Plan was never implemented.

Access planning for the Elk and Flathead watersheds, however, was addressed through a process referred to as Coordinated Access Management Planning (CAMP). This operationally-oriented planning process attempted to incorporate public comment and address access-related conflicts in a public context. Although the management strategy, principles and direction expressed through CAMP were relevant, successful implementation and support of the plan never materialized, and consequently public and government expectations were never fulfilled. Perhaps the most significant factor which adversely influenced the success of this process was the lack of legislated backing which was required to ensure compliance with the CAMP's access management decisions. This process concluded in 1989.

By 1995 the access conflict among the recreating public, commercial recreation and wildlife conservation interests had manifested itself to a point where resolution of access-related issues needed to be addressed through the development of a public, proactive access management planning and implementation process.

In 1996 another access management process was initiated. This was precipitated through B.C. Environment's (BCE) response to a request by the Southern Guides and Outfitters to develop a strategic and operational access management plan for the south east area of the Kootenay Region. Participants at the initial meeting included representatives from the forest industry, big game guiding industry, BCE and Ministry of Forests (MOF). A collective decision was made to establish an access planning committee comprised of representatives from the ministries of Lands, Parks, Highways, Forests (Golden, Invermere, Cranbrook districts) Agriculture, Mines and Environment. Terms of Reference were developed which reflected the respective representative responsibilities, the committee responsibilities, the history of access planning, rationale, intent, access management planning principles and applicable legislation, to assist in the implementation of a potential plan.

Before proceeding further, the committee determined that it was necessary to establish Inter-Agency Management Committee (IAMC) support. A presentation was made to the IAMC and while the consensus reflected general support for the committee's access planning process, IAMC decided that the process should be suspended until the broader, regional Kootenay Boundary Land Use Plan - Implementation Strategy (KBLUP-IS) process was completed. The access planning process was in fact suspended and was never resumed.

In 1997 the Kootenay Boundary Land Use Plan - Implementation Strategy (KBLUP-IS) was completed. With respect to access and conservation issues the KBLUP-IS consistently expressed the significance of access planning to successful implementation of the connectivity, grizzly bear, ungulate winter range, mountain caribou, recreation, regional and resource management zone objectives and strategies. In response to this direction, access planning initiatives were initiated by BCE and MOF personnel in the former Invermere and Golden Forest Districts in 1997 and 1999, respectively.

The process in the Golden Forest District, commonly referred to as the Golden Backcountry Recreation Access Plan (GBRAP), provides comprehensive recreational access zoning and management direction. The Ministry of Sustainable Resource Management is currently seeking government endorsement of this plan.

In late 2001 an access planning process similar to GBRAP, referred to as the Recreation Management Strategy (Section B 7.1.), was initiated by Ministry of Sustainable Resources Management staff in the eastern section of the Cranbrook Timber Supply Area (TSA). Expectations are that this process will extend to the remaining area of the TSA and other parts of the East Kootenays, beginning in 2003

Wildlife Conservation and Access Related Issues

In conjunction with the extensive industrial road access infrastructure, the opportunity to access relatively all areas of Crown land in pursuit of recreational activities has increased dramatically in the East Kootenay over the last two decades. Compounding the conventional motorized and non-motorized public recreational access issues directly related to road development and use is the rapidly expanding access demands by the commercial recreation sector. The most palpable result of this expansion of access and relatively unplanned and unregulated use is the increasing discord among public, commercial and environmental interests.

From a wildlife conservation and environmental perspective, the principle issues of concern related to access, road development and use are:

Aquatic habitat alteration:
Soil erosion, attributed to unregulated road use or road construction inevitably results in sedimentation which can reduce the availability of oxygen, increase water temperature and decrease the invertebrate population in aquatic habitats. Cumulatively these impacts result in decreased fish stocks.

Habitat loss:
Road and trail construction is significantly reducing the productive land base area contributing to suitable wildlife habitat resources.

Habitat destruction:
Excessive or unregulated off-road motorized use has the potential to adversely affect sensitive terrestrial vegetative ecosystems through the introduction of invasive weed species, physical destruction, soil compaction and erosion.

Wildlife loss:
A significant mortality factor directly related to road kills of mammals, reptiles, amphibians and birds is associated with vehicular use of roads. Compounding this problem are the documented cases of animals intentionally killed by indiscriminate use of recreational vehicles.

Harassment and displacement of wildlife:
Unregulated recreational access-related activity is a concern particularly when it impacts summer and winter ranges or habitats which are inhabited by species sensitive to intrusive motorized or intensive public pressure. Behavioural reactions range from trauma, which can culminate in increased energy expenditure, altered activity or patterns, such as avoidance of favourable forage and cover habitat, to separation from large protective groups. The cumulative effect usually results in a reduction of species diversity and populations.

Pollution:
Unregulated motorized recreational access use can contribute to noise, atmospheric and aquatic pollution. All have the potential of imposing detrimental effects on wildlife and fish species and populations.

Roads and habitat fragmentation:
Use of roads by humans may disrupt grizzly bear behaviour and social structure, reduce the availability of adjacent foraging habitats, and create barriers to movement (Archibald et al.1987; McLellan and Shackleton 1988; McLellan 1990; Mace et al. 1996). Grizzly bear may be either temporarily or permanently displaced from habitats in close proximity to roads. Permanent displacement, of course, results in loss of habitat use while avoidance can be reflected in a variety of behavioural responses. Grizzly bear can simply avoid an area (Mattson et al.1992) others will not enter as often as they would without disturbance and others may stay for short durations only (Olson and Gilbert 1994' Olson et al. 1997).

Road barriers:
Roads act as barriers to the movement of black and grizzly bear (1990; Mace and Waller 1997) and it appears that in some circumstances they can contribute to the separation of adjacent home ranges that would otherwise be expected to overlap (Mace and Waller 1997). Roads by themselves or acting cumulatively with other developments create "ecologically dead zones" which bears are reluctant to occupy or cross (Servheen 1994; Mace et al. 1996). Habitat effectiveness for bears is near zero in these areas

Related Access Management and Planning Processes

British Columbia:
The Muskwa-Kechika Management Area in northeastern BC was developed through a consultative process and approved by an Order in Council in 1997. Two jurisdictions for the area

were determined. The jurisdiction and administration of the Muskwa-Kechika Area is implemented under the Environment and Land use Act. The other jurisdiction component of the area based plan is the Muskwa-Kechika Management Plan which identifies management objectives and is "implemented by all relevant government agencies through agency specific management activities, local strategic plans, resource development permits and Crown land and natural resource dispositions".

The management intent for the area is to ensure the retention of wilderness characteristics and the maintenance of wildlife and habitat while accommodating resource development and use. The integration of management activities especially related to the planning, development and management of road access within the Muskwa-Kechika Area is central to achieving this intent.

Alberta:

The Castle River Access Management Plan in southwestern Alberta (adjacent to the SRMMP area) was completed and approved in1992. It is a co-operative, consultative planning and management process designed to balance environmental protection with motorized and other recreational activities in the Castle River area. In conjunction with the preparation and development of winter and summer recreation activity maps, management recommendations for implementation education enforcement and engineering were established. The intent of the process was to provide a balanced solution to the issue of motorized recreation, establish a system for the management of motorized recreation, maintain ecological integrity, promote recreational responsibility and awareness and establish an avenue for public input with respect to appropriate recreational management.

Montana:

An interagency access management plan prepared for the southwest area of Montana was completed in 1987 and implemented in 1990. In essence, the purpose of the plan was to establish motorized control areas. The control areas were created with the intent of guiding and promoting motor vehicle users enjoyment and safety without damaging natural resources or precipitating conflict with other users.

The 1987 Kootenay National Forest Management Plan, which is partially adjacent to the SRMMP area, covers the Northwest section of Montana. The management goals and objectives of this plan reflect public issues and resource management concerns.

Idaho:

The consultative Colville National Forest Access Plan in northwest Idaho was completed by interdisciplinary resource teams in 1991. This plan focuses public attention on the overall road network and its impact on National Forest use. Important public concerns and issues include the need for roads, standards of new construction, the rationale for future access management practices and environmental protection. Implementation of the Colville National Forest Access Plan is conducted through the Colville National Forest Land and resource Management Plan.

References

Archibald, W.R., R. Ellis, and A.N. Hamilton. 1987. Responses of grizzly bears to logging truck traffic in the Kimsquit River valley, British Columbia. Int. Conf. Bear Res. And Manage. 7:251-257.

Mace, R.D., J.S. Waller, T.L. Manley, L.J. Lyon and H. Zuuring. 1996. Relationships among grizzly bears, roads and habitat in the Swan Mountains, Montana. Journal of Applied Ecology 33:1395-1404.

Mace, R. and J. Waller. 1997. Final Report: grizzly bear ecology in the Swan Mountains, Montana. Montana Fish, Wildlife and Parks, Helena, M.T. 191pp.

Mattson, D.J., B.M. Blanchard, and Knight. 1992. Yellowstone grizzly bear mortality, human habituation, and whitebark pine seed crops. J. Wildl. Manage. 56:432-442.

McLellan, B.N. and D.M. Shackelton. 1988. Grizzly bears and resource-extraction industries: Effects of roads on behaviour, habitat use and demography. J. Appl. Ecol. 25:451-460.

McLellan, B.N. 1990. Relationships between human industrial activity and grizzly bears. Int. Conf. Bear Res. and Manage. 8:57-64

Olson, T.L. and Gilbert, B.K. 1994. Variable impacts of people on brown bear use of an Alaskan river. International Conference on Bear Research and Management 9:97-106.

Olson, T.L. and Gilbert, B.K., and R.C. Squibb. 1997. The effects of increasing human activity on brown bear use of an Alaskan river. Biological Conservation 82: 95-99.

Planning and Assessment Branch and Kootenay Region Ministry of Environment. 1985. Elk-Flathead Strategic Environmental Management Plan. Pages 43-46.

Servheen, C. 1994. Responses to issues raised concerning the grizzly bear recovery plan. U.S. fish and Wildlife Service, Missoula, MT. 14pp.

APPENDIX 24.7 - DEFINITIONS

Habitat Effectiveness

An analysis of habitat capability, current habitat suitability and human activities to determine the actual ability of an ecosystem to support a specific or suite of wildlife species

Fragmentation

Habitat fragmentation occurs when an area supporting the life/habitat needs of an organism is reduced in size and becomes isolated. In some cases, the resultant habitat "patch" is too small to meet all seasonal of life-stage requirements and consequently cannot support an individual or mating pair. In other cases, the resultant habitat "patch" is of sufficient size to meet these requirements, but is isolated from similar habitats; the individual, mating pair or population becomes isolated from other individuals and populations of its kind. Habitat fragmentation can result in localized extirpations which, when compounded, will significantly reduce long-term species viability.

Biodiversity

Biological diversity relates to the variety of life in an area and includes genetic diversity of populations, the number and type of species, the distribution and abundance of species communities and ecosystems and the natural processes that connect them. Essentially, there are three primary interdependent attributes of biological diversity: composition, structure and function.. Composition encompasses species and genetic diversity. Structure relates to the pattern of habitat within an ecosystem or landscape, while function involves ecological and evolutionary processes.

At the landscape level, factors that adversely affect biological diversity include habitat loss, habitat and ecosystem fragmentation, and alteration of natural succession and disturbance regimes.

Maintaining a wide diversity of living things has long been recognized as both the product, and the foundation, of a healthy and sustainable environment. Biodiversity is defined as the diversity of plants, animals and other living organisms in all their forms and levels of organization and includes the diversity of genes, species, ecosystems and the evolutionary and functional processes that link them. Current principles and assumptions of forest management recognize that the more managed forests emulate those established by natural disturbances, the greater the probability that biodiversity will be maintained (Norris et al. 1992; Booth et al. 1993; Rove, 1993; Grumbine 1994; Kaufmann et al. 1994; Pojar et al. 1994). This approach is also considered to compensate for incomplete knowledge and provide some insurance against future uncertainties.

During the development of the Forest Practices Code, best available science was distilled to ensure sustainable forest management. Biodiversity management under the Code was split into 'coarse' and 'fine' filter management. The 'coarse filter' level recognizes that the habitat needs of most forest species can be met by providing a variety of seral stages, patch size, and forest stand attributes and structures across a representative variety of ecosystems and landscapes. It also recognizes the importance of maintaining connectivity of ecosystems to ensure the dispersal and movement of forest organisms across the landscape; and that forested areas of sufficient size are required to maintain interior habitat conditions and to prevent the formation of excessive 'edge' habitat (Spies et al 1994). More specific 'fine filter' management prescriptions are required for individual species.

For 'coarse level' biodiversity management, the Forest Practices Code Biodiversity Guidebook (1995) provides landscape-level seral retention targets for biogeoclimatic units under different natural disturbance regimes. The targets were developed with a combination of scientific evidence and informed professional judgement and were designed to reduce impacts of forest management on biodiversity within targeted social and economic constraints.

It should be noted that scientific opinion is changing in relation to specific targets within this policy, although the broad concepts of managing by emulating natural disturbance regimes continue to be valid. Newer scientific research shows that targets and natural disturbance intervals may be severely under-estimated for wet ecosystems.

Ecosystem Based Management

This is a comprehensive management approach that involves working with others towards common goals, including sustainability of the ecosystem. It is a process that requires the integration of ecological considerations with economic and social factors. It also requires an understanding of the human and naturally induced stresses that affect the ecosystem and a recognition that the ecosystem is dynamic and subsequently is constantly changing.

Proper Functioning Condition

An example of proper functioning condition (PFC) could relate to riparian wetland areas which would be considered functional, "when adequate vegetation, landform or large woody debris is present to dissipate stream energy associated with high water-flows, thereby reducing erosion and improving water quality; filter sediment, capture bed-load and aid floodplain development; improve flood-water retention and ground water recharge; develop root masses that stabilise stream banks against cutting action; develop diverse ponding and channel characteristics to provide the habitat and the water depth, duration and temperature necessary for fish production, waterfowl breeding and other uses; and support greater biodiversity.

The functioning condition of riparian wetland areas is a result of interaction among geology, soil, water and vegetation" (U.S. Department of the Interior Bureau of land Management 1998).

References

Booth, D.L., D.W.K. Boulter, D.J. Neave, A.A. Rotherham, and D.A. Welsh. 1993. Natural forest landscape management: a strategy for Canada. The Forestry Chronicle 698(2): 1421-145.

Grumbine, R.E. 1994. What is ecosystem management? Conservation Biology 8(1): 27-38.

Kaufmann, M.R., R.T. Graham, D.A. Boyce Jr., W.H. Moir, L.Perry, R.T. Reynolds, R.L. Basset, P. Mehlop, C.B. Edminster, W.H. Block, and P.S. Corn. 1994. An ecological basis for ecosystem management. USDA Forest Service General Technical Report RM-246. Fort Collins, Colo. 22pp.

Norris, L.A., H. Cortner, M.R. Cutler, S.G. Haines, J.E. Hubbard, M.A. Kerrick, W.B. Kessler, J.C. Nelson, R. Stone, J.M. Sweeney, and L.W. Hill. 1992. task force report on sustaining log-term forest health and productivity. Society of America Foresters, Bethesda, Md. 83pp.

Pojar, J., N. Diaz, D. Steventon, D. Apostol, and K. Mellen. 1994. Biodiversity planning and forest management at the landscape scale. Pages 55-70 in Mark H. Huff, L.K. Norris, J.B. Nyberg, and N.L.Wilken (coord.) expanding horizons of forest management: proceedings of the Third Habitat Futures Workshop. USDA Forest Service General Technical Report PNW-GTR-336. Portland, Ore.

Province of British Columbia. 1995 Forest Practices Code of British Columbia Biodiversity Guidebook. 99pp.

Rowe, J.S. 1993. Biodiversity at the landscape level> Manuscript prepared for "Measuring Biodiversity for Forest Policy and Management", University of British Columbia Centre for Applied conservation Biology, Vancouver, B.C., 24 February 1994. 15 pp.

Spies, T.A., W.J. Ripple, and G.A. Bradshaw. 1994. Dynamics and pattern of a managed coniferous forest landscape in Oregon. Ecological Applications 4(3): 555-568.

U.S. Department of the Interior. 1998. Riparian Area Management. Bureau of Land Management Proper Functioning Condition Work Group, Denver Colo. Technical Reference 1737-9. 1193; Revised 1995, 1998.